Airwell

Service Manual

CKD DCI Series

Indoor Units	Outdoor Units
CKD 025	*DCI 72Z*
CKD 030	*DCI 80Z*

REFRIGERANT **R410A**

HEAT PUMP

SM CKDDCI 1-A.1 GB

APRIL – 2010

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CONTENTS

LIST OF EFFECTIVE PAGES

Note: Changes in the pages are indicated by a “Revision#” in the footer of each effected page (when none indicates no changes in the relevant page). All pages in the following list represent effected/ non effected pages divided by chapters.

Dates of issue for original and changed pages are:

Original ..... 0 ..... April 2010

Total number of pages in this publication is 122 consisting of the following:

Page No.	Revision No. #		Page No.	Revision No. #		Page No.	Revision No. #

- Zero in this column indicates an original page.

* Due to constant improvements please note that the data on this service manual can be modified with out notice.

** Photos are not contractual.

Table of Contents

1. INTRODUCTION

1.1 General

The new **DCI 72Z, DCI 80Z** split unit range comprises the following RC (heat pump) models:

- **CKD 025**
- **CKD 030**

1.2 Main Features

The **DCI CKD** series benefits from the most advanced technological innovations, namely:

- DC inverter technolegy
- R410a
- High COP
- Pre-Charged units up to the max' allowing tubing distance
- Networking system connectivity
- A dry contract for presence detector or power shedding functions(configurable)
- Cooling operation at outdoor temprature down to -10°C
- Heating operation at outdoor temprature down to -15°C
- Bended indoor coil with treated aluminum fins and coating for improved efficiency
- Easy access to the interconnecting tubing and wiring connections
- Automatic treated air sweep.
- Low indoor and outdoor noise levels.
- Easy installation and service.

1.3 Indoor Unit

The indoor unit is ceiling mounted, and can be easily fitted to residential and commercial applications

It includes:

- A large diameter centrifugal fan, allowing low noise level operation
- Motorized flaps
- Bended indoor coil with hydrophilic aluminum fins.
- Advanced electronic control boc assembly.

1.4 Control

The micro processor indoor controller, and an infrared remote control, supplied as standard, provides complete operating function and programming.
For further details, please refer to the Operation/Instullation Manual.

1.5 Outdoor Unit

DCI outdoor units can be installed as floor or wall mounted units by using a wall supporting bracket. The metal sheets are protected by anti- corrosion paint work allowing long life resistance. All outdoor units are pre-charged. For further information please refer to the Product Data Sheet, Chapter 2.

DCI 72Z
DCI 80Z

Outdoor Unit Feature

Feature	DCI 72, 80
Display	LED's 4
Outdoor Fan	Variable speed DC Inverter
M2L cable Port	No

1.6 Tubing Connections

Flare type interconnecting tubing to be produced on site.

For further details please refer to the Operation/Installation Manual.

1.7 Accessories

RCW Wall Mounted Remote Control

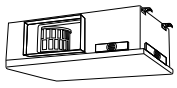
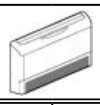
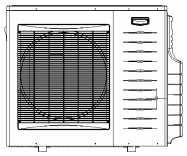
The RCW remote control is mounted on the wall, and controls the unit either as an infrared remote control or as a wired controller. The wired controller can control up to 10 Indoor units with the same program settings and adjustments.

For further details please refer to Optional Accessories, Chapter 15.

1.8 Inbox Documentation

Each unit includes its own installation and operation manuals.

1.9 Matching Table

OUTDOOR UNITS			INDOOR UNITS					
								
	MODEL	REFR	CKD025	CKD030	DNG 72	DNG 80	PXD 72	PXD 80
	DCI72Z	R410A	√		√		√	
	DCI80Z	R410A		√		√		√

2. PRODUCT DATA SHEET

2.1 CKD 025 / DCI 72Z

Model Indoor Unit				**CKD025 DCI**	
Model Outdoor Unit				**DCI 72Z**	
Installation Method of Pipe				Flared	
Characteristics			Units	Cooling	Heating
Capacity (4)			Btu/hr	24570(5120-27300)	27300(5120-30030)
			kW	7.20(1.50-8.00)	8.00(1.50~8.80)
Power input (4)			kW	2.39(0.60-2.75)	2.21(0.50~2.50)
EER (Cooling) or COP(Heating) (4)			W/W	3.01	3.61
Energy efficiency class				B	A
Power supply			V	220-230	
			Ph	Single	
			Hz	50	
Rated current			A	10.5	9.7
Power factor				0.97	0.97
Prated (IDU)			W	140	
Prated (IDU+ODU)			W	3000	
Starting current			A	15	
Circuit breaker rating			A	20	
INDOOR	Fan type & quantity			Centifugal x 1	
	Fan speeds	H/M/L	RPM	710/650/570	
	Air flow (1)	H/M/L	m3/hr	1230/1120/980	
	External static pressure	Min	Pa	0	
	Sound power level (2)	H/M/L	dB(A)	62/59/56	
	Sound pressure level (3)	H/M/L	dB(A)	50/47/45	
	Moisture removal		l/hr	2.5	
	Condenstate drain tube I.D		mm	32	
	Dimensions	WxHxD	mm	840x840x230	
	Net Weight		kg	26	
	Package dimensions	WxHxD	mm	955x955x247	
	Packaged weight		kg	34	
	Units per pallet		units	8	
	Stacking height		units	8	
OUTDOOR	Refrigerant control			EEV	
	Compressor type,model			Two Rotary,Sanyo(Sheny) C-7RVN153H0W	
	Fan type & quantity			Propeller(direct) x 1	
	Fan speeds	H	RPM	850	
	Air flow	H	m3/hr	3600	
	Sound power level	H	dB(A)	66	
	Sound pressure level (3)	H	dB(A)	56	
	Dimensions	WxHxD	mm	1040x864x412	
	Net Weight		kg	64.5	
	Package dimensions	WxHxD	mm	1140x930x510	
	Packaged weight		kg	72	
	Units per pallet		Units	4	
	Stacking height		units	2 levels	
	Refrigerant type			R410A	
	Scharg		kg(7.5m)	2.3kg	
	Additional charge			7.5m<Length≤20m:+0g; 20m<Length≤30m: +300g	
	Connections between units	Liquid line	In.(mm)	3/8"(9.53)	
		Suction line	In.(mm)	5/8"(15.88)	
		Max.tubing length	m.	30	
		Max.height difference	m.	15	
Operation control type				Remote control	
Heating elements (Option)			kW		
Others					

(1) Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units).
(2) Airflow in ducted units; at nominal external static pressure.
(3) Sound power in ducted units is measured at air discharge.
(4) Sound pressure level measured at 1.0 meter distance from unit.

2.2 CKD 030 / DCI 80Z

Model Indoor Unit				**CKD030 DCI**	
Model Outdoor Unit				**DCI 80 Z**	
Installation Method of Pipe				Flared	
Characteristics			Units	Cooling	Heating
Capacity (4)			Btu/hr	27280(6800~30000)	30690(5110~34100)
			kW	8.0(2.0-8.8)	9.0(1.5~10.0)
Power input (4)			kW	2.49(0.5-3.2)	2.49(0.5~3.1)
EER (Cooling) or COP(Heating) (4)			W/W	3.21	3.61
Energy efficiency class				A	A
Power supply			V	220-230	
			Ph	1	
			Hz	50	
Rated current			A	11.1	11.1
Power factor				0.97	0.97
Prated (IDU)			W	140	
Prated (IDU+ODU)			W	3200	
Starting current			A	15	
Circuit breaker rating			A	25	
INDOOR	Fan type & quantity			Centrifugal x 1	
	Fan speeds	H/M/L	RPM	610/570/540	
	Air flow (1)	H/M/L	m3/hr	1170/1080/990	
	External static pressure	Min	Pa	0	
	Sound power level (2)	H/M/L	dB(A)	56/53/51	
	Sound pressure level (3)	H/M/L	dB(A)	44/42/40	
	Moisture removal		l/hr	3	
	Condenstate drain tube I.D		mm	32	
	Dimensions	WxHxD	mm	840x840x300	
	Net Weight		kg	32	
	Package dimensions	WxHxD	mm	955x955x317	
	Packaged weight		kg	40	
	Units per pallet		units	6	
	Stacking height		units	6 levels	
OUTDOOR	Refrigerant control			EEV	
	Compressor type,model			Two Rotary,Sanyo(Sheny) C-7RVN153H0W	
	Fan type & quantity			Propeller(direct) x 1	
	Fan speeds	H	RPM	850	
	Air flow	H	m3/hr	3600	
	Sound power level	H	dB(A)	69	
	Sound pressure level (3)	H	dB(A)	58	
	Dimensions	WxHxD	mm	1040x864x412	
	Net Weight		kg	66	
	Package dimensions	WxHxD	mm	1140x930x510	
	Packaged weight		kg	73.5	
	Units per pallet		Units	4	
	Stacking height		units	2 levels	
	Refrigerant type			R410A	
	Standard charge		kg(7.5m)	2.5	
	Additional charge			7.5m<Length≤20m:+0g; 20m<Length≤30m: +250g	
	Connections between units	Liquid line	In.(mm)	3/8"(9.53)	
		Suction line	In.(mm)	5/8"(15.88)	
		Max.tubing length	m.	Max.30	
		Max.height difference	m.	Max.15	
Operation control type				Remote control	
Heating elements (Option)			kW		
Others					

(1) Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units).
(2) Airflow in ducted units; at nominal external static pressure.
(3) Sound power in ducted units is measured at air discharge.
(4) Sound pressure level measured at 1.0 meter distance from unit.

3. RATING CONDITIONS

Standard conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN 14511.

Cooling:
Indoor: 27°C DB 19°C WB
Outdoor: 35 °C DB

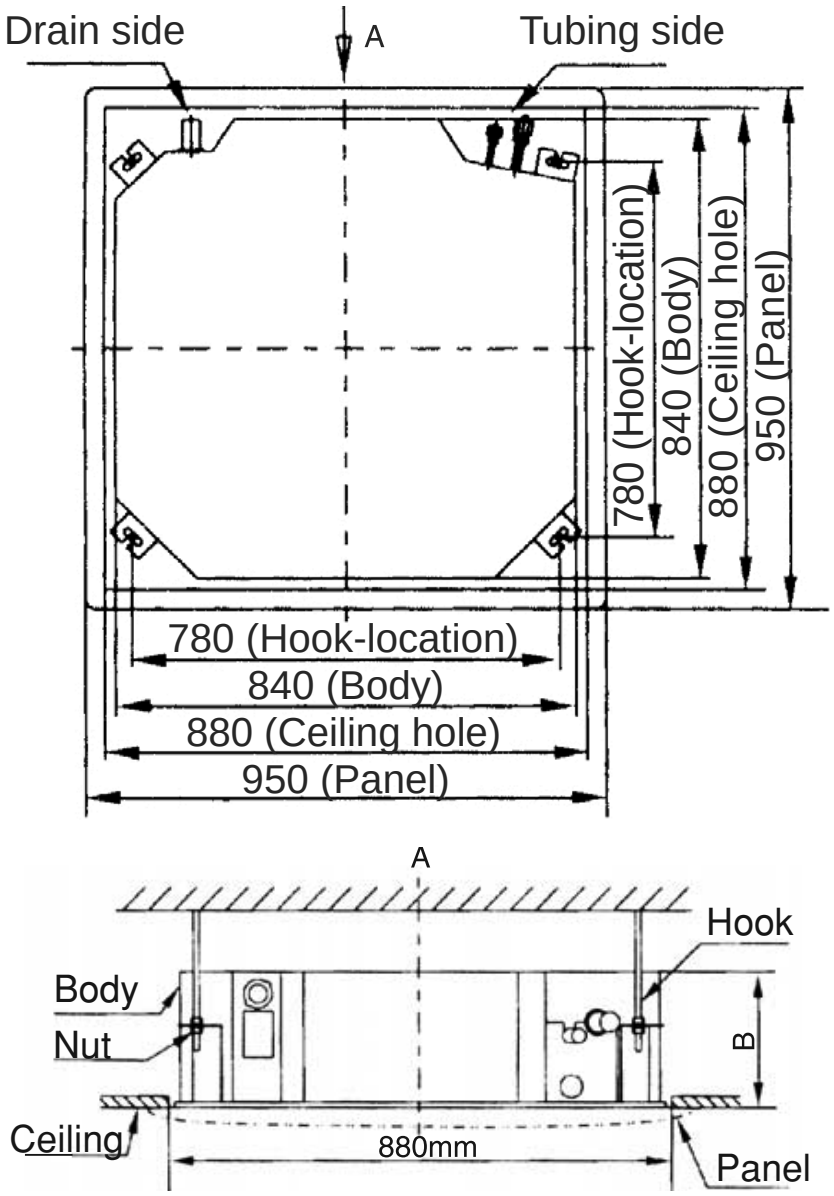
Heating:
Indoor: 20°C DB
Outdoor: 7°C DB 6°C WB

3.1 Operating Limits

		Indoor	Outdoor
Cooling	Upper limit	32°C DB 23°C WB	46°C DB
	Lower limit	21°C DB 15°C WB	-10°C DB
Heating	Upper limit	27°C DB	24°C DB 18°C WB
	Lower limit	10°C DB	-15°C DB -16°C WB
Voltage	1PH	198 – 264	
	3ph	N/A	

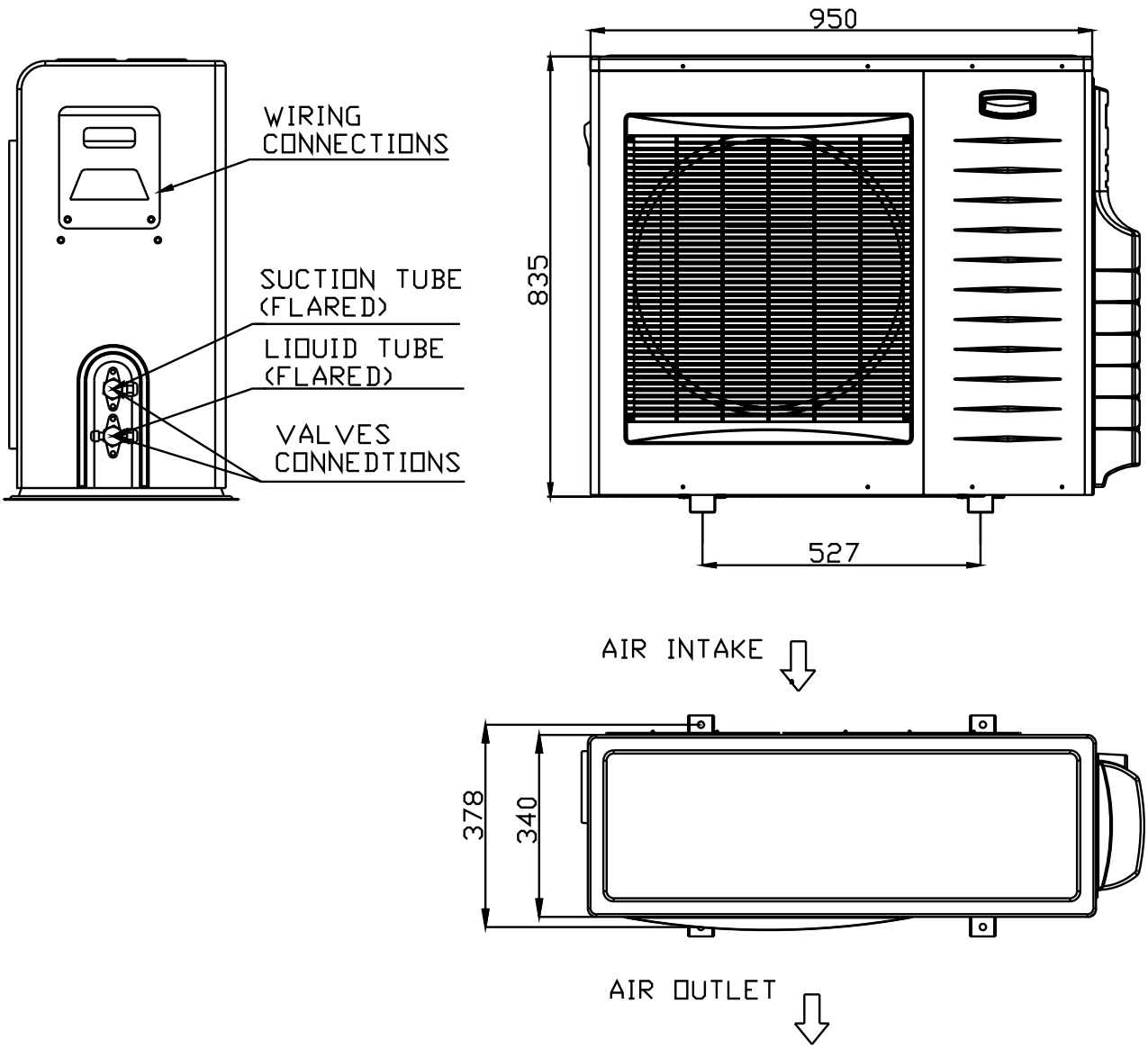
4. OUTLINE DIMENSIONS

4.1 Indoor Unit: CKD025 / CKD030 DCI



CKD025: B=240mm
CKD030: B=310mm

4.2 Outdoor Unit: DCI 72Z, DCI 80Z



5. PERFORMANCE DATA & PRESSURE CURVES

5.1 CKD025 / DCI 72Z

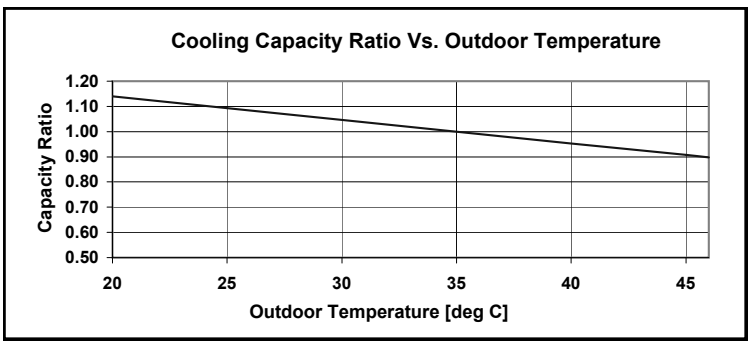
5.1.1 Cooling Capacity (kW)

		ID COIL ENTERING AIR DB/WB TEMPERATURE [ºC]				
OD COIL ENTERING AIR DB TEMPERATURE [ºC]	DATA	22/15	24/17	27/19	29/21	32/23
-10 - 20 (protection range)	TC	80 - 110 % of nominal				
	SC	80 - 105 % of nominal				
	PI	25 - 50 % of nominal				
25	TC	7.09	7.51	7.93	8.34	8.76
	SC	6.26	6.36	6.45	6.54	6.63
	PI	1.81	1.85	1.89	1.93	1.97
30	TC	6.73	7.15	7.56	7.98	8.40
	SC	6.02	6.11	6.20	6.30	6.39
	PI	2.06	2.10	2.14	2.18	2.22
35	TC	6.36	6.78	**7.20**	7.62	8.04
	SC	5.77	5.87	**5.96**	6.05	6.15
	PI	2.31	2.35	**2.39**	2.43	2.47
40	TC	6.00	6.42	6.84	7.25	7.67
	SC	5.53	5.62	5.72	5.81	5.90
	PI	2.56	2.60	2.64	2.68	2.72
46	TC	5.56	5.98	6.40	6.82	7.24
	SC	5.24	5.33	5.42	5.52	5.61
	PI	2.86	2.90	2.94	2.98	3.02

LEGEND

TC – Total Cooling Capacity, kW
SC – Sensible Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (ºC)
DB – Dry Bulb Temp., (ºC)
ID – Indoor
OD – Outdoor

5.1.2 Capacity Correction Factors (Cooling)



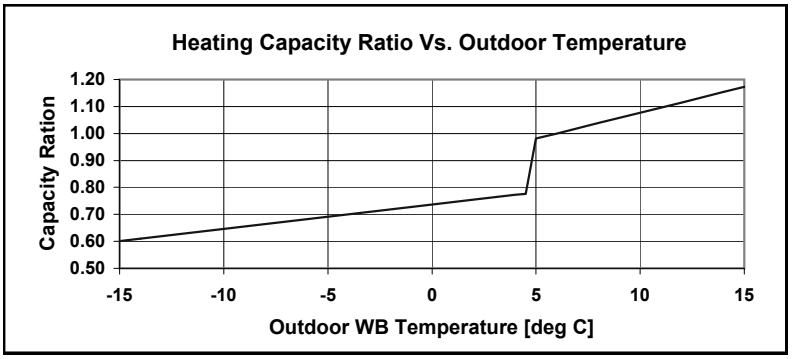
5.1.3 Heating Capacity

OD COIL ENTERING AIR DB/WB TEMPERATURE [°C]	DATA	ID COIL ENTERING AIR DB TEMPERATURE [°C]		
		15	20	25
-15/-16	TC	3.64	3.12	2.59
	PI	1.55	1.66	1.77
-10/-12	TC	4.81	4.28	3.76
	PI	1.75	1.86	1.97
-7/-8	TC	5.68	5.16	4.63
	PI	1.90	2.01	2.12
-1/-2	TC	6.12	5.59	5.07
	PI	1.97	2.08	2.19
2/1	TC	6.41	5.88	5.36
	PI	2.02	2.13	2.24
7/6	TC	8.52	**8.00**	7.48
	PI	2.10	**2.21**	2.32
10/9	TC	8.97	8.44	7.92
	PI	2.14	2.25	2.36
15/12	TC	9.41	8.88	8.36
	PI	2.18	2.29	2.40
15-24 (Protection Range)	TC	85 - 105 % of nominal		
	PI	80 - 120 % of nominal		

LEGEND

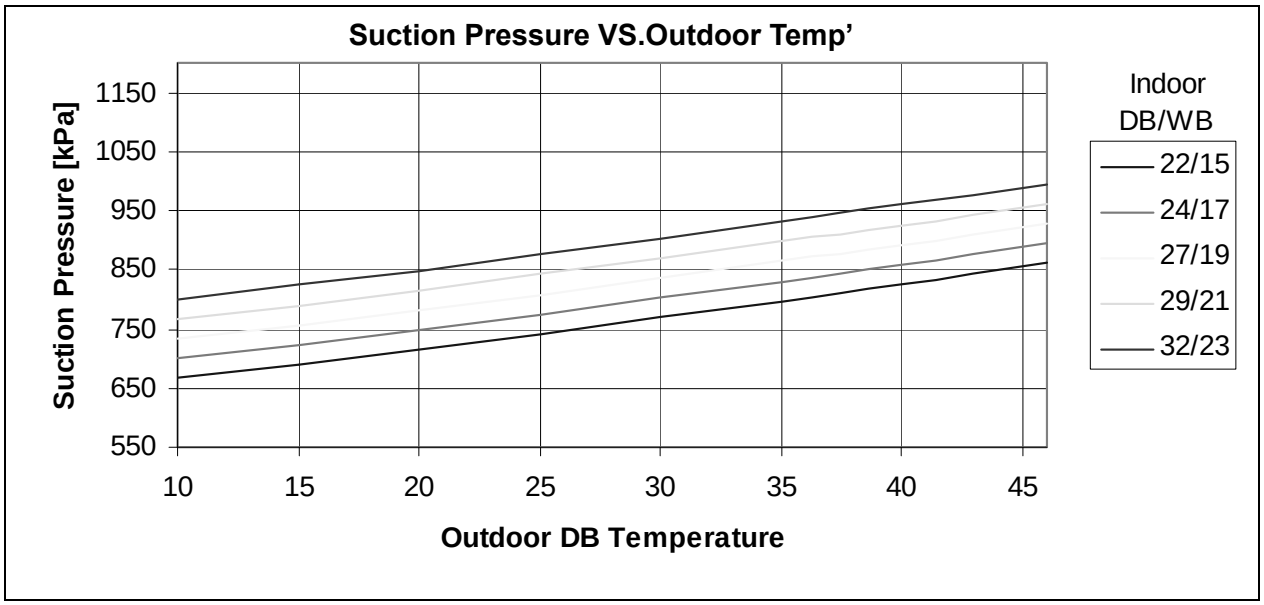
TH – Total Heating Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)
ID – Indoor
OD – Outdoor

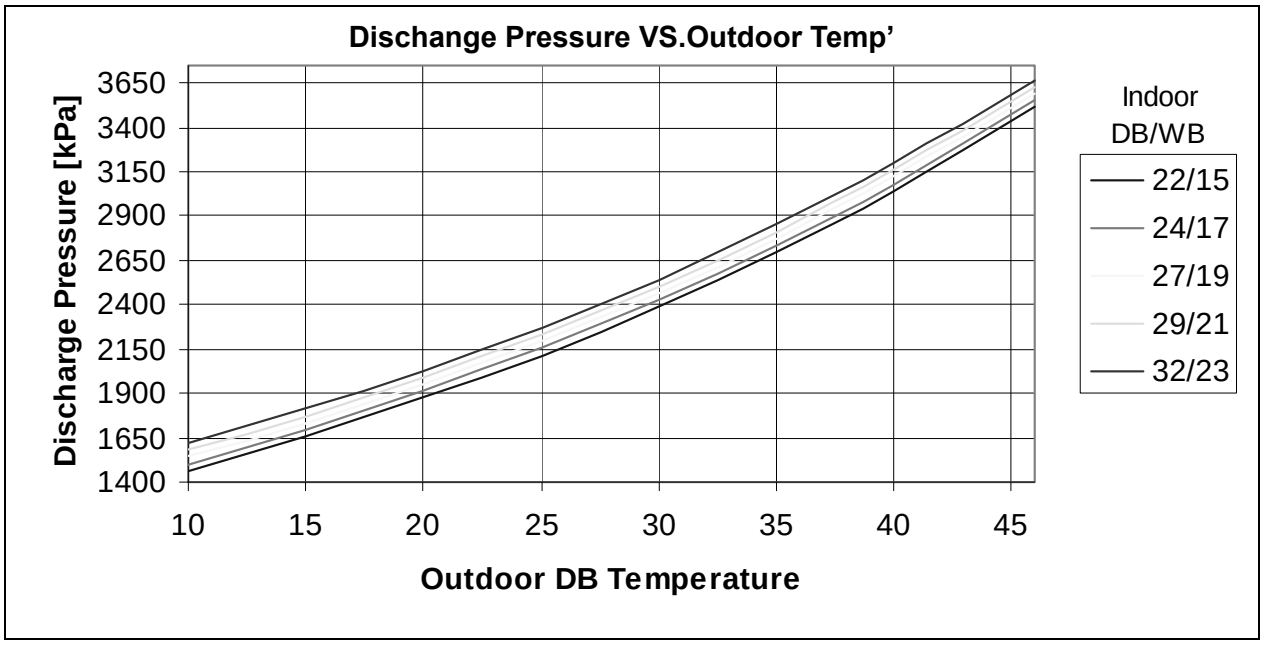
5.1.4 Capacity Correction Factors (Heating)



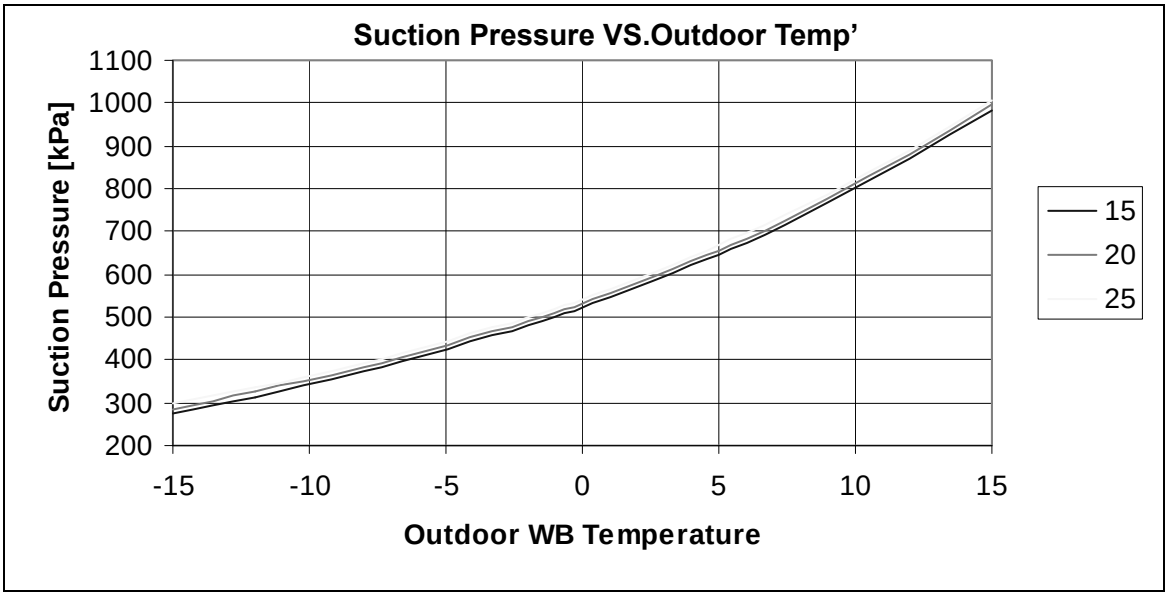
5.1.5 Pressure Curves (Cooling – Technician Mode)

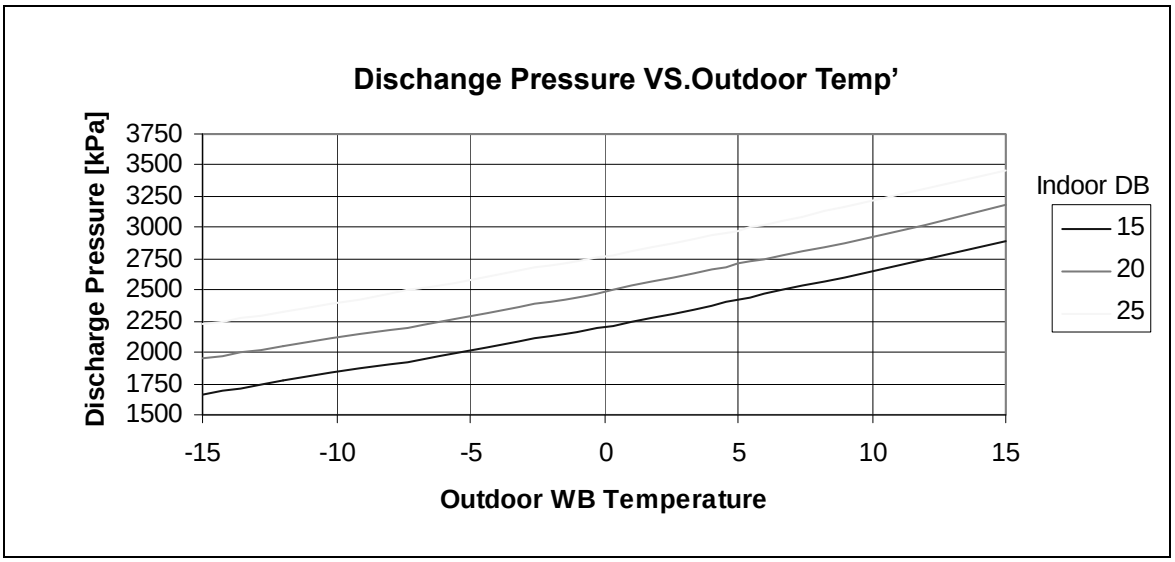
5.1.5.1 *Cooling*





5.1.5.2 *Heating*





5.2 CKD030 / DCI 80Z

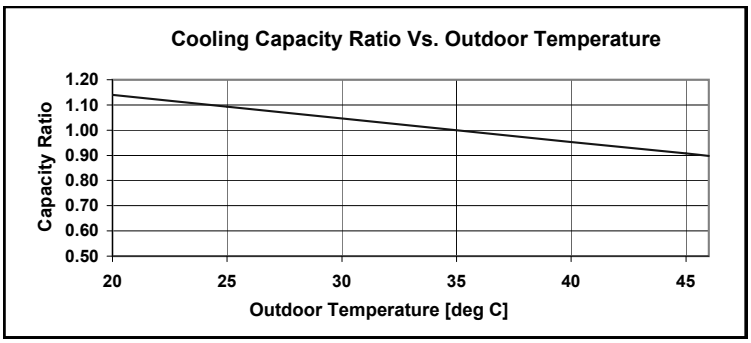
5.2.1 Cooling Capacity (kW)

OD COIL ENTERING AIR DB TEMPERATURE [°C]	DATA	ID COIL ENTERING AIR DB/WB TEMPERATURE [°C] 22/15	24/17	27/19	29/21	32/23
-10 – 20 (protection range)	TC	80 - 110 % of nominal				
	SC	80 - 105 % of nominal				
	PI	25 - 50 % of nominal				
25	TC	7.88	8.34	8.81	9.27	9.74
	SC	6.60	6.70	6.79	6.89	6.99
	PI	1.88	1.92	1.97	2.01	2.05
30	TC	7.48	7.94	8.40	8.87	9.33
	SC	6.34	6.44	6.54	6.64	6.73
	PI	2.14	2.19	2.23	2.27	2.31
35	TC	7.07	7.54	**8.00**	8.46	8.93
	SC	6.08	6.18	**6.28**	6.38	6.48
	PI	2.41	2.45	**2.49**	2.53	2.57
40	TC	6.67	7.13	7.60	8.06	8.52
	SC	5.83	5.92	6.02	6.12	6.22
	PI	2.67	2.71	2.75	2.79	2.84
46	TC	6.18	6.65	7.11	7.58	8.04
	SC	5.52	5.62	5.71	5.81	5.91
	PI	2.98	3.02	3.07	3.11	3.15

LEGEND

TC – Total Cooling Capacity, kW
SC – Sensible Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)
ID – Indoor
OD – Outdoor

5.2.2 Capacity Correction Factors (Cooling)



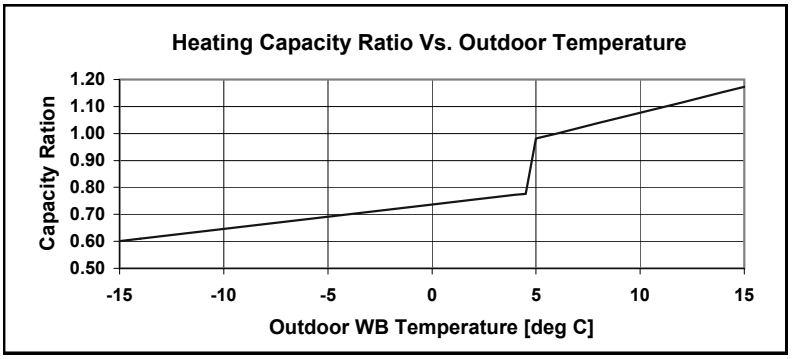
5.2.3 Heating Capacity

OD COIL ENTERING AIR DB/WB TEMPERATURE [°C]	DATA	ID COIL ENTERING AIR DB TEMPERATURE [°C]		
		15	20	25
-15/-16	TC	4.10	3.51	2.92
	PI	1.74	1.87	1.99
-10/-12	TC	5.41	4.82	4.23
	PI	1.97	2.09	2.22
-7/-8	TC	6.39	5.80	5.21
	PI	2.14	2.26	2.39
-1/-2	TC	6.88	6.29	5.70
	PI	2.22	2.35	2.47
2/1	TC	7.21	6.62	6.03
	PI	2.28	2.40	2.53
7/6	TC	9.59	9.00	8.41
	PI	2.37	2.49	2.61
10/9	TC	10.09	9.50	8.91
	PI	2.41	2.54	2.66
15/12	TC	10.58	9.99	9.40
	PI	2.46	2.58	2.71
15-24 (Protection Range)	TC	85 - 105 % of nominal		
	PI	80 - 120 % of nominal		

LEGEND

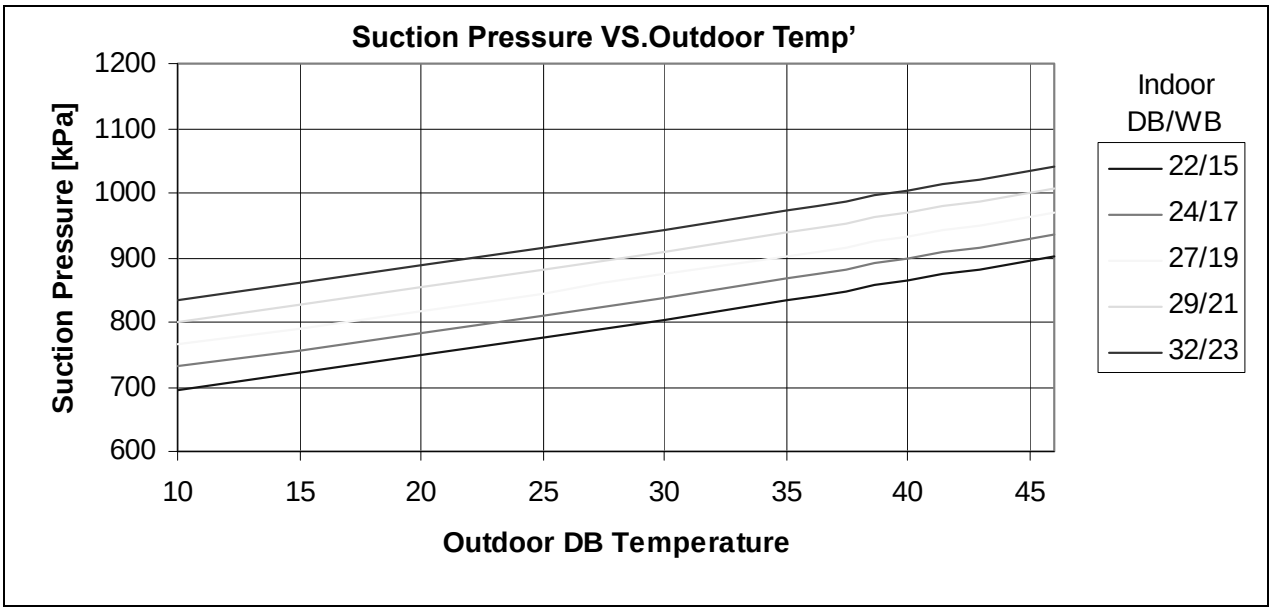
TH – Total Heating Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)
ID – Indoor
OD – Outdoor

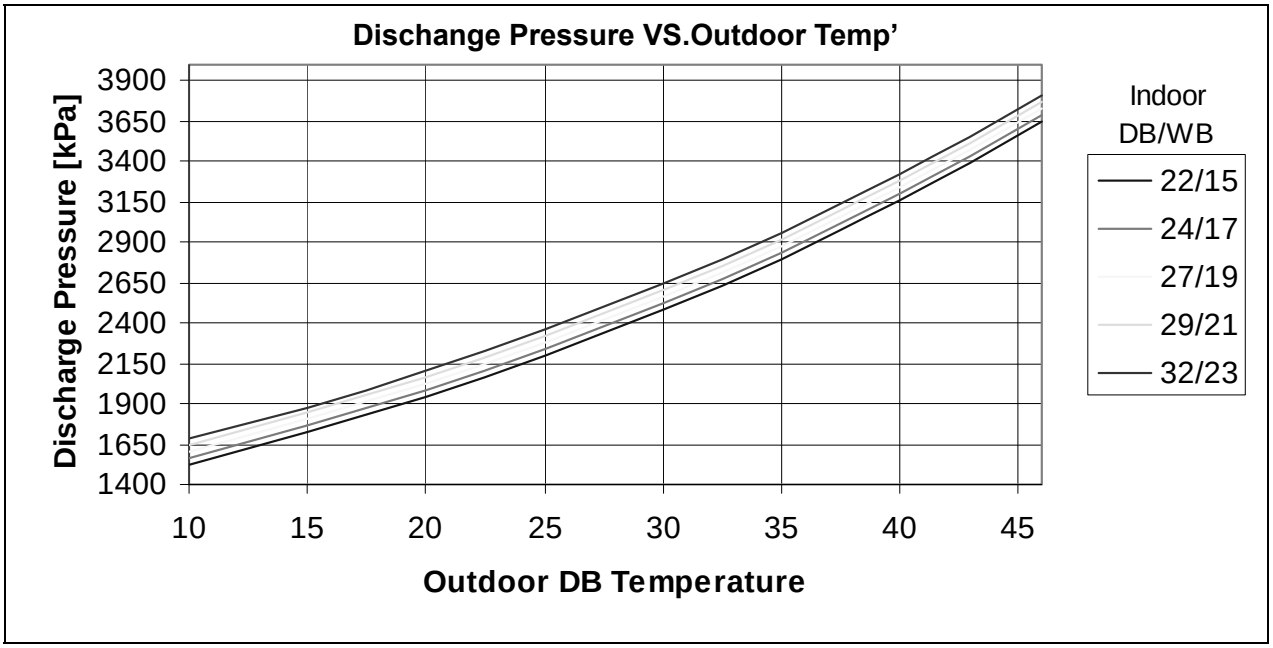
5.2.4 Capacity Correction Factors (Heating)



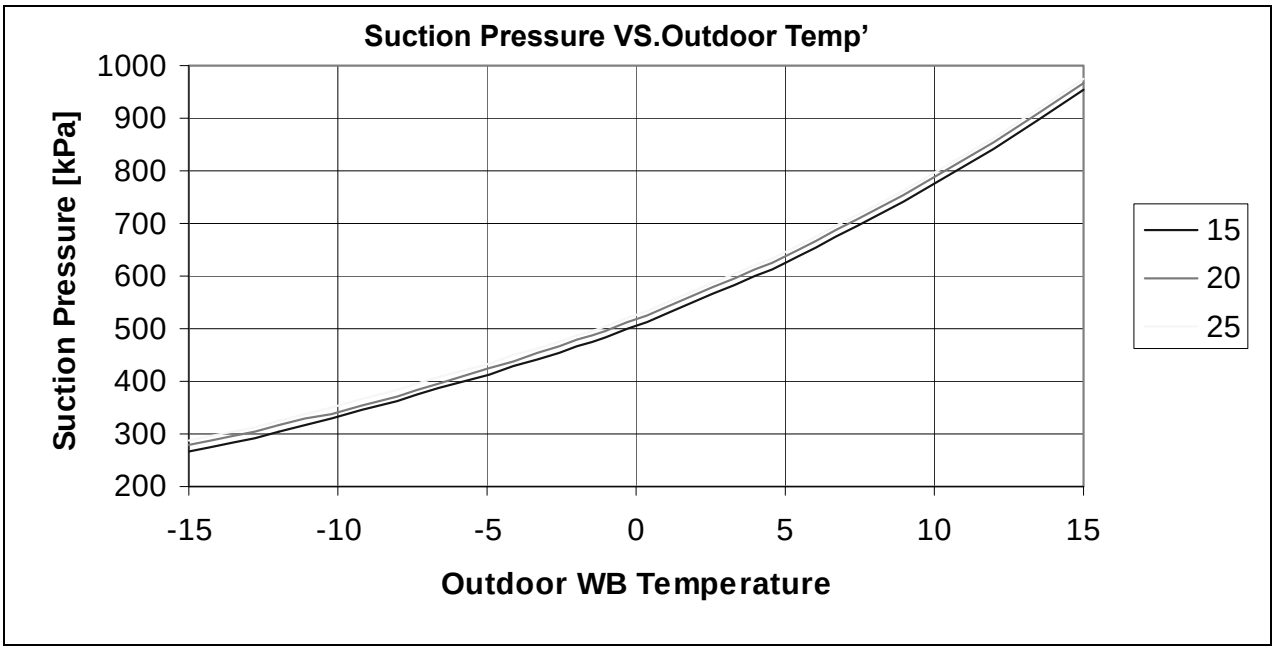
5.2.5 Pressure Curves (Cooling – Technician Mode)

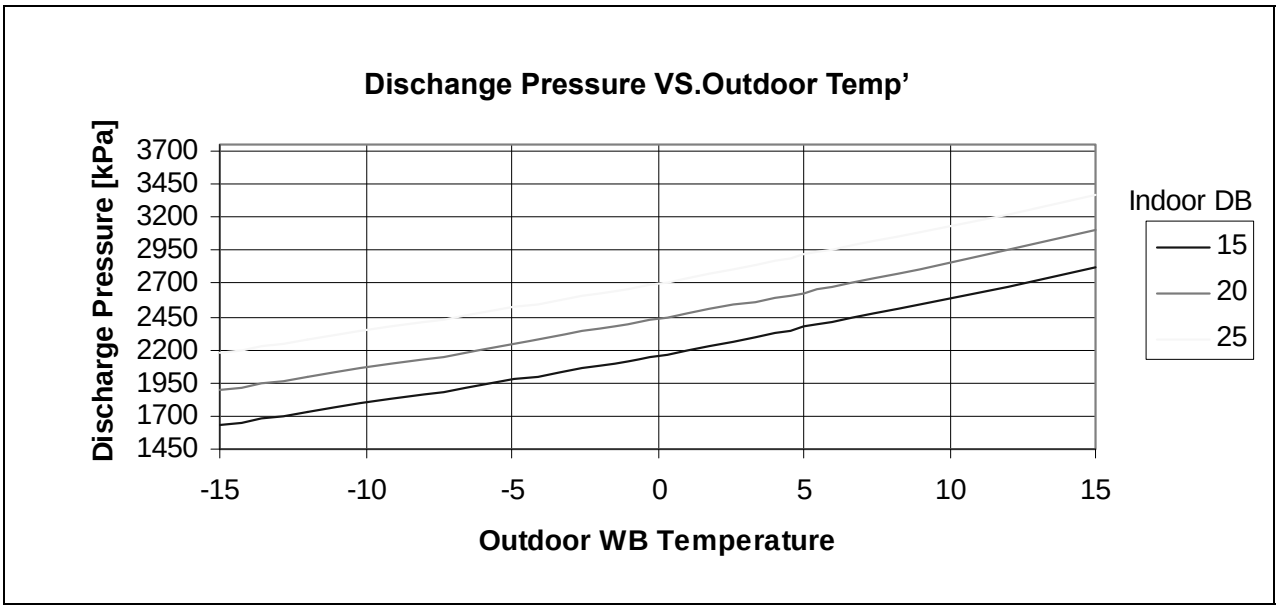
5.2.5.1 *Cooling*





5.2.5.2 *Heating*





6. SOUND LEVEL CHARACTERISTICS

6.1 Indoor Units Test Scheme

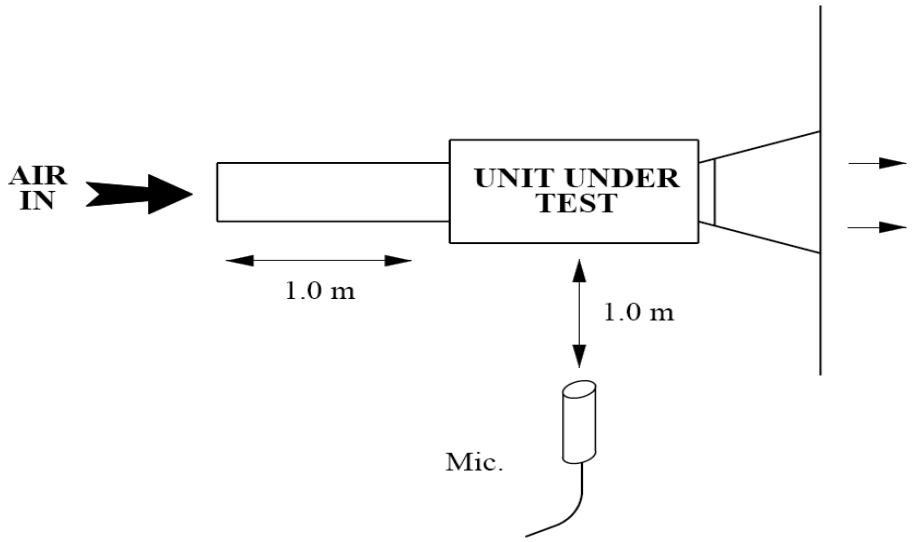
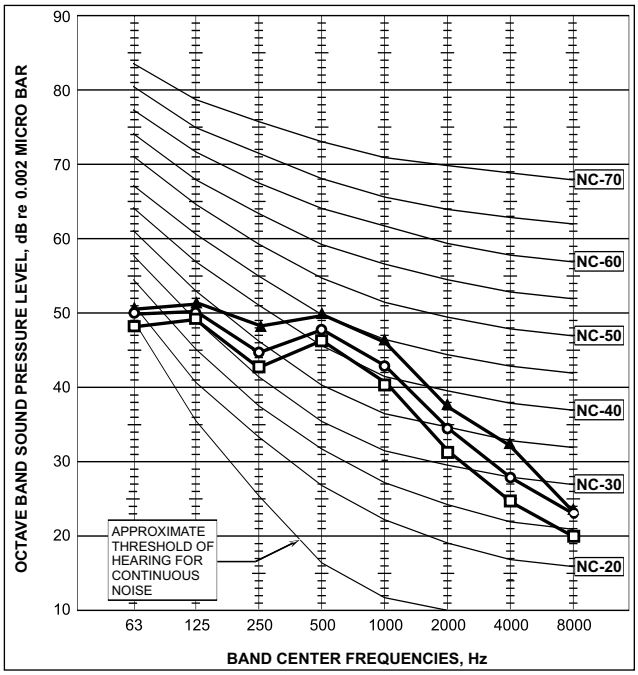


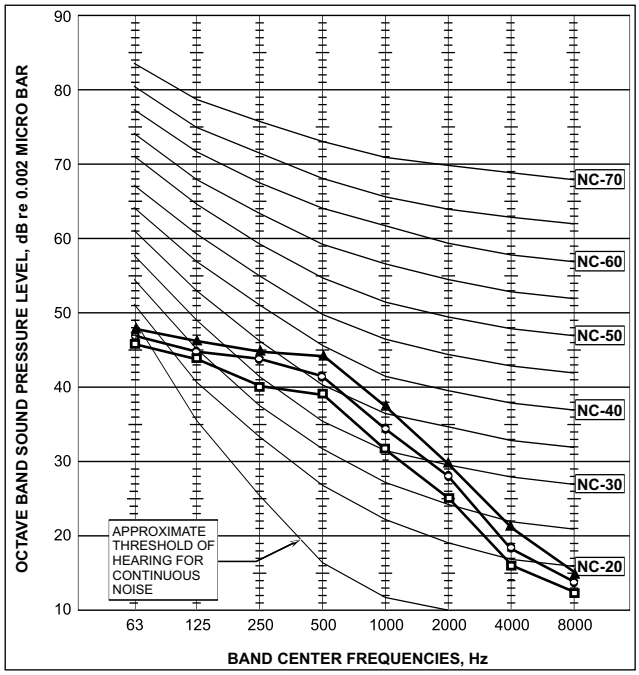
Figure 1

6.2 Sound Pressure Level Spectrum (Measured as Figure 1)

CKD025 DCI



CKD030 DCI



FAN SPEED	LINE
HI	▲
ME	○
LO	□

6.3 Outdoor Units

MODEL		SPL dB(A)	SPW dB(A)
Indoor	Outdoor	Cooling/Heating	Cooling/Heating
CKD025 DCI	DCI 72Z	***52/55***	***62/63***
CKD030 DCI	DCI 80Z	***58/58***	***69/69***

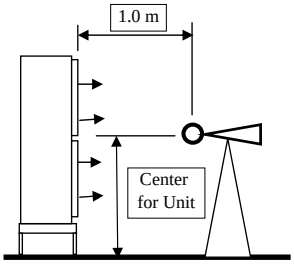
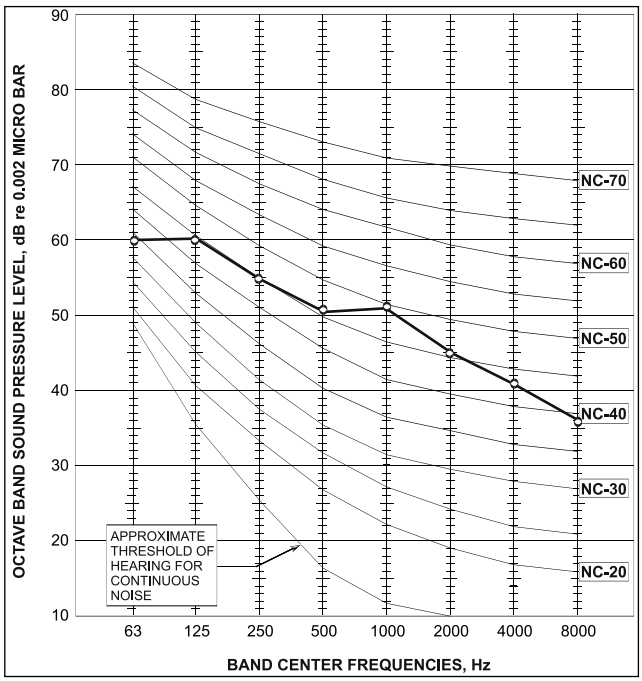


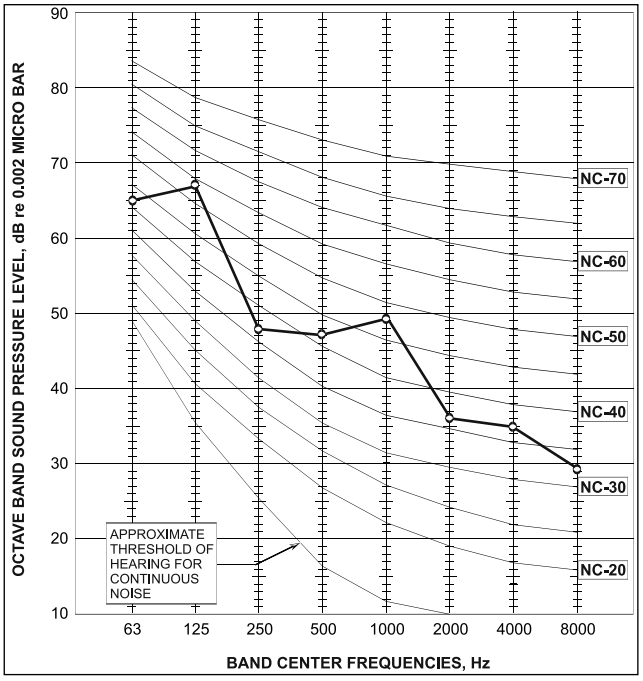
Figure 2

6.4 Sound Pressure Level Spectrum (Measured as Figure 2)

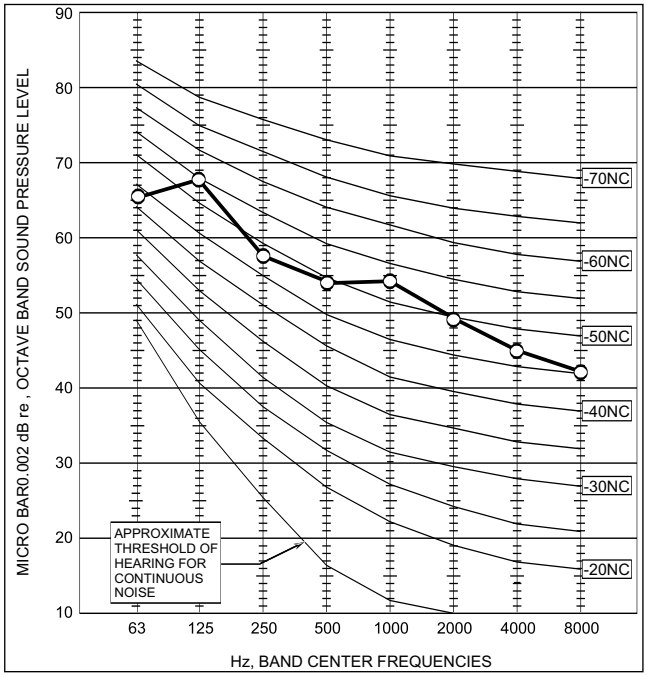
DCI 72Z Cooling



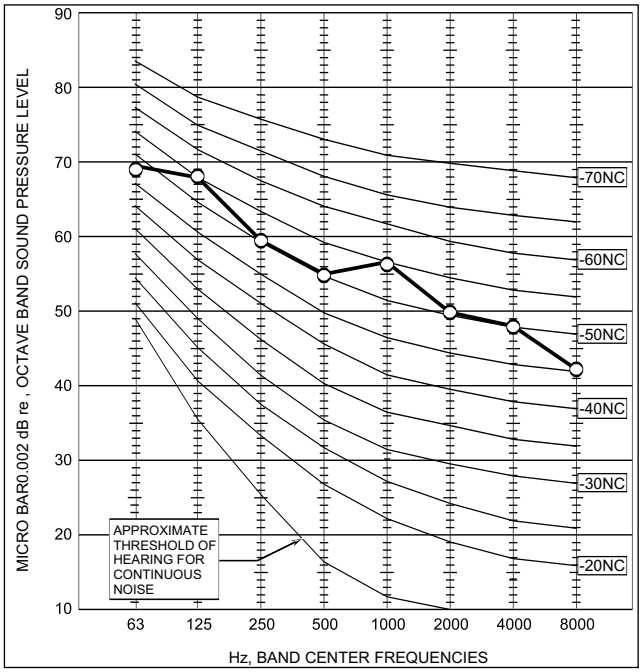
DCI 72Z Heating



DCI 80Z Cooling



DCI 80Z Heating



7. ELECTRICAL DATA

7.1 Single Phase Units

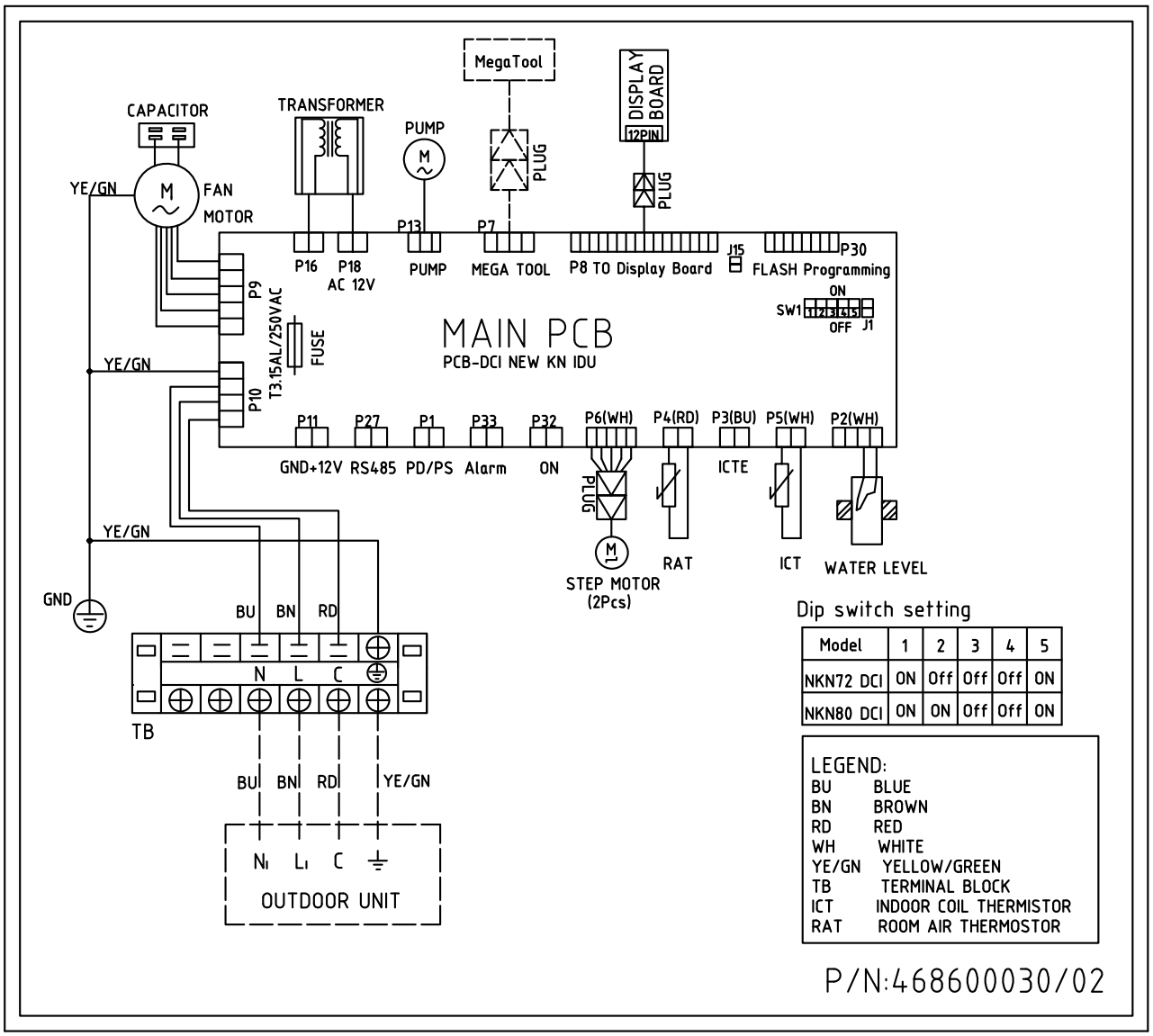
MODEL	CKD025 DCI	CKD030 DCI
Power Supply	1PH, 220–230VAC, 50 Hz	
Connected to	Outdoor	
Starting Current ❖	15A	
Circuit Breaker rating	20A	
Power Supply Wiring No. X Cross Section	3 × 2.5 mm^2	
Interconnecting Cable No. X Cross Section	4 × 2.5 mm^2	

❖Starting current is the current peak when starting the compressor.

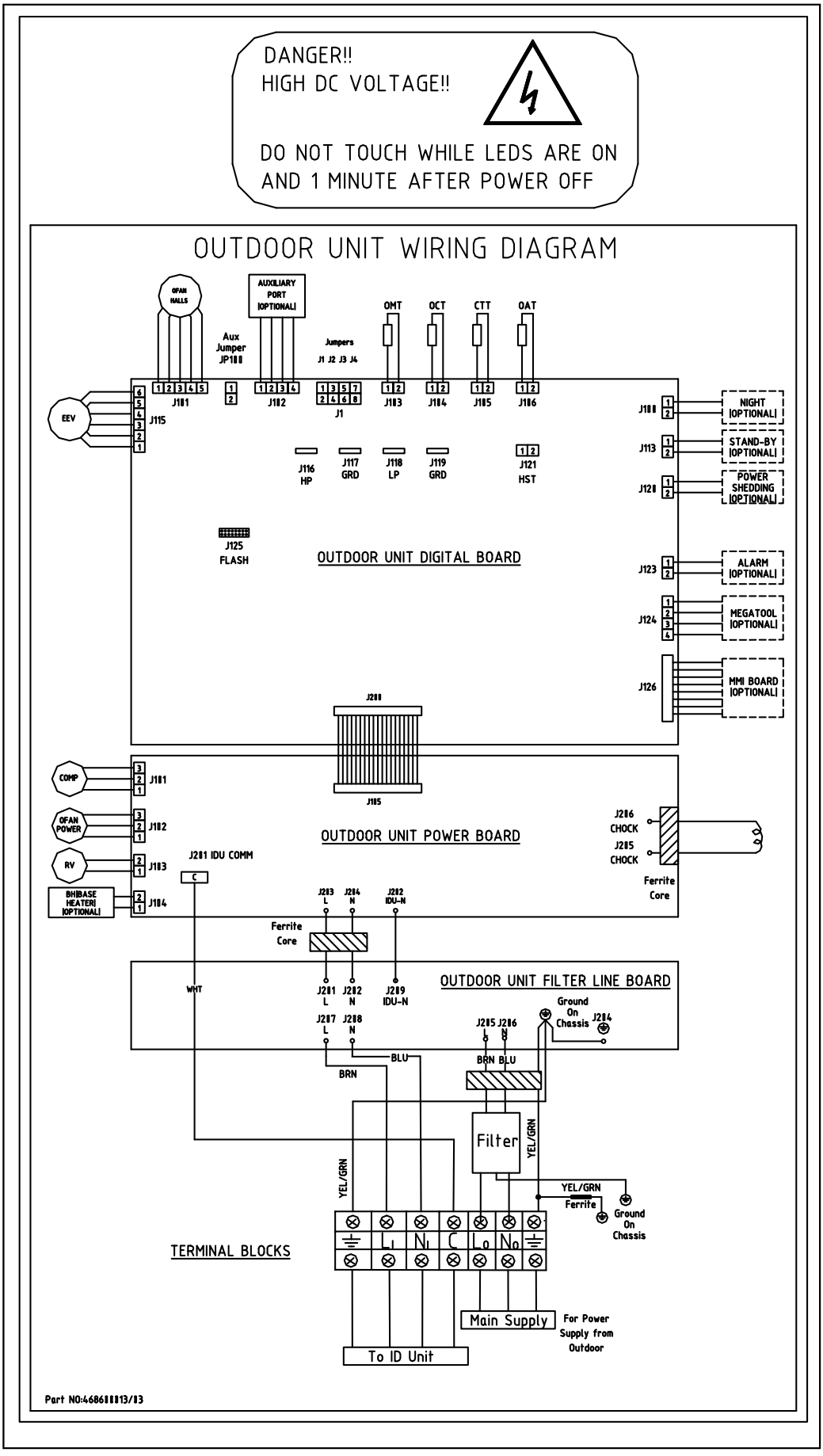
***NOTE*:**
Power wiring cord should comply with local lows and electrical regulations requirements.

8. WIRING DIAGRAMS

8.1 Indoor Unit: CKD025, CKD030 DCI

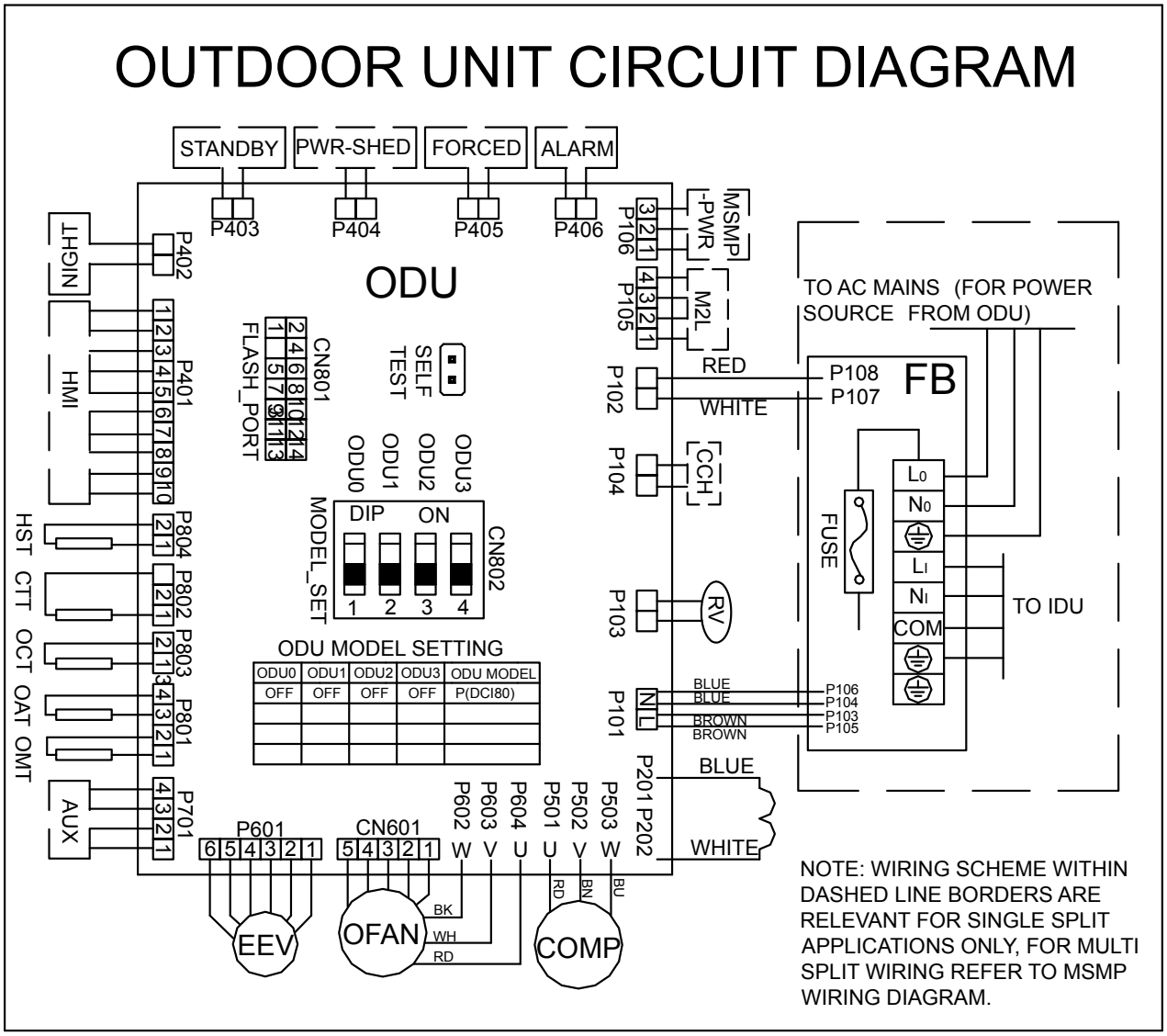


8.2 Outdoor Units: DCI 72Z



CONTENTS

8.3 Outdoor Units: DCI 80Z

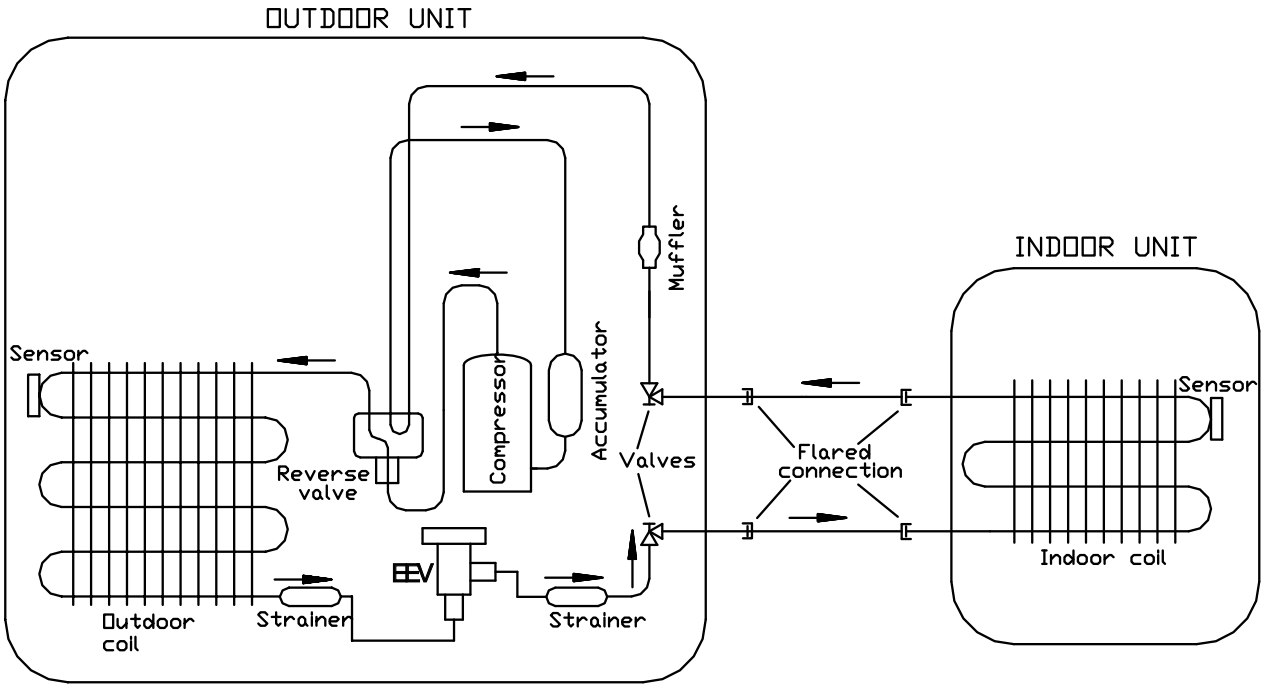


9. REFRIGERATION DIAGRAMS

9.1 Heat Pump Models

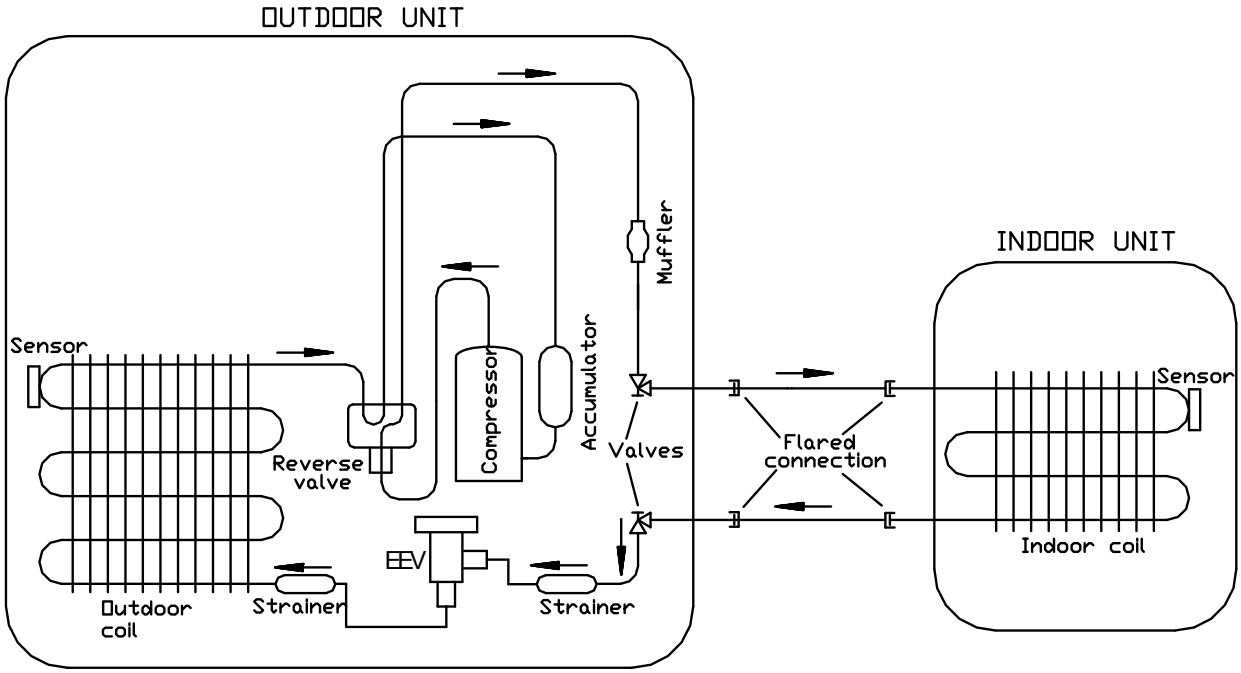
9.1.1 CKD025, CKD030

Cooling mode



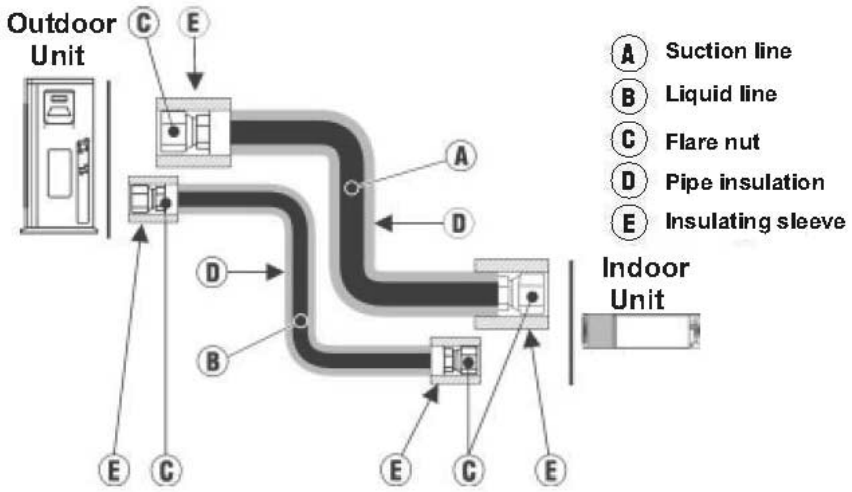
COOLING & DRY MODE

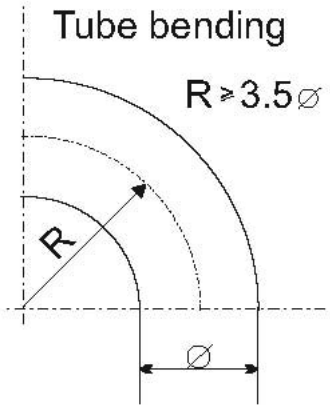
Heating mode

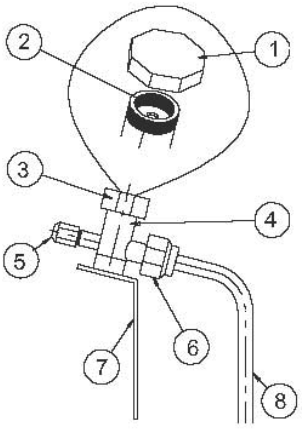


HEATING & DRY MODE

10. TUBING CONNECTIONS







TUBE (Inch) / TORQUE (Nm)	1/4"	3/8"	1/2"	5/8"	3/4"
Flare Nuts	15-18	40-45	60-65	70-75	80-85
Valve Cap	13-20	13-20	18-25	18-25	40-50
Service Port Cap	11-13	11-13	11-13	11-13	11-13

1. Valve Protection Cap-end
2. Refrigerant Valve Port (use Allen wrench to open/close)
3. Valve Protection Cap
4. Refrigerant Valve
5. Service Port Cap
6. Flare Nut
7. Unit Back Side
8. Copper Tube

11. CONTROL SYSTEM

General Functions and Operating RulesThe DCI software is fully parametric.

All the model dependent parameters are shown in Blue color and with Italic style [*parameter*].
The parameters values are given in the last section of this control logic chapter of the service manual.

11.1 System Operation Concept

The control function is divided between indoor and outdoor unit controllers. Indoor unit is the system 'Master', requesting the outdoor unit for cooling/heating capacity supply. The outdoor unit is the system 'Slave' and it must supply the required capacity unless it enters into a protection mode avoiding it from supplying the requested capacity.
The capacity request is transferred via indoor to outdoor communication, and is represented by a parameter called 'NLOAD'. NLOAD is an integer number with values between 0 and 127, and it represents the heat or cool load felt by the indoor unit.

11.2 Compressor Frequency Control

11.2.1 NLOAD setting

The NLOAD setting is done by the indoor unit controller, based on a PI control scheme.
The actual NLOAD to be sent to the outdoor unit controller is based on the preliminary LOAD calculation, the indoor fan speed, and the power shedding function.
NLOAD limits as a function of indoor fan speed:

Indoor Fan Speed	Maxium NLOAD Cooling	Maxium NLOAD Heating
Low	*MaxNLOADIF1C*	*MaxNLOADIF1H*
Medium	*MaxNLOADIF2C*	*MaxNLOADIF2H*
High	*MaxNLOADIF3C*	*MaxNLOADIF3H*
Turbo	*MaxNLOADIF4C*	*MaxNLOADIF4H*
Auto	*MaxNLOADIF5C*	*MaxNLOADIF5H*

NLOAD limits as a function of power shedding:

Mode	Power Shedding OFF	Power Shedding ON
Cooling	No limit	Nominal Cooling
Heating	No limit	Nominal heating

11.2.2 Target Frequency Setting

Target Frequency Setting for DCI 72/80

The compressor target frequency is a function of the NLOAD number sent from the indoor controller and the outdoor air temperature.
Basic Target Frequency Setting:

NLOAD	Target Frequency
127	*Maximum Frequency*
10<NLOAD<127	Interpolated value between minimum and maximum frequency
10	Minimum frequency
0	Compressor is stopped

Target frequency limits as a function of outdoor air temperature (OAT):

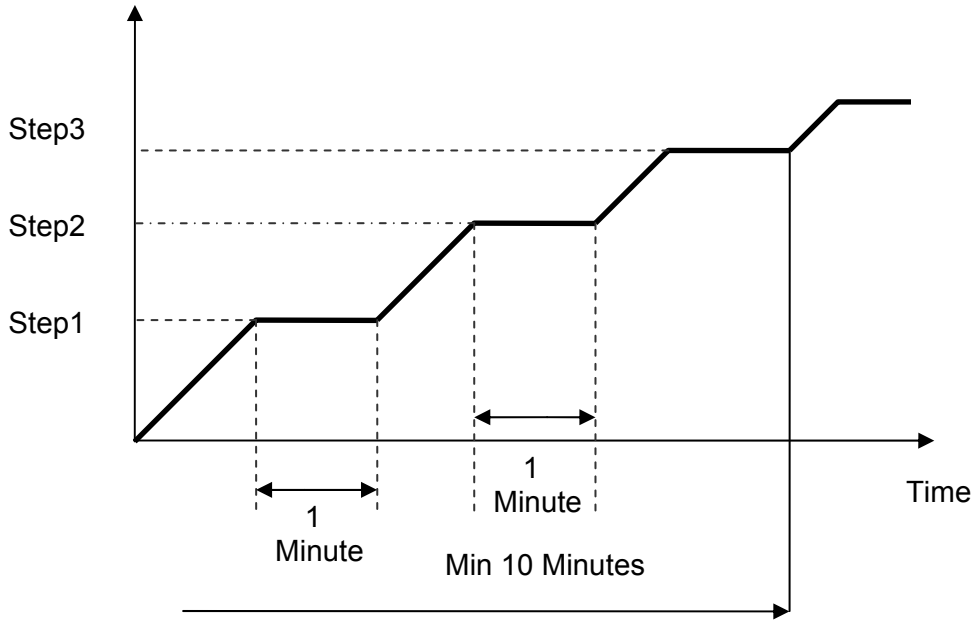
OAT Range	Cooling Mode limits	Heating Mode limits
OAT < 6	*MaxFreqAsOATC*	No limit
6 ≤ OAT < 15		*MaxFreqAsOAT1H*
15≤ OAT<28		*MaxFreqAsOAT2H*
28≤ OAT	No limit	

11.2.3 Frequency Changes Control

When the unit is running normally , the compressor frequency change rate is 1 Hz/sec.

11.2.4 Compressor Starting Control

Compressor starting control for DCI72/80



11.2.5 Minimum On and Off Time

3 minutes

11.3 Indoor Fan Control

8 Indoor fan speeds are determined for each model. 4 speeds for cool/dry/fan modes and 4 speeds for heat mode.
When user sets the indoor fan speed to a fixed speed (Low/ Medium/ High), unit will operate constantly at set speed.
When Auto Fan is selected, indoor unit controller can operate in all speeds. The actual speed is set according to the cool/heat load.

11.3.1 Turbo Speed

The Turbo speed is activated during the first 30 minutes of unit operation when auto fan speed is selected and under the following conditions:
Difference between set point and actual room temperature is bigger than 3 degrees.
Room temperature > 22 for cooling, or < 25 for heating.

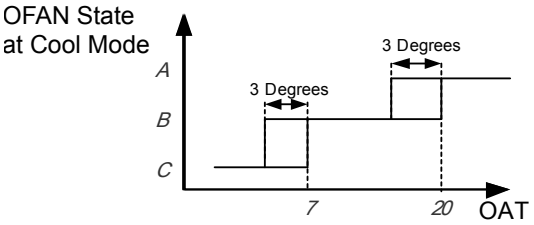
11.3 Outdoor Fan Control

Outdoor Fan Control for DCI72/80

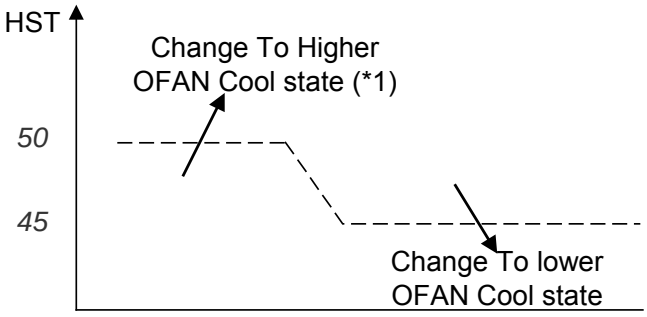
7 outdoor fan speeds are determined for each model. 3 speeds for cool and dry modes, and 3 speeds for heat mode, and a very low speed.
Outdoor fan speed is a function of compressor frequency and outdoor air temperature (OAT).
4 routines for fan control are determined. The control routine selection depends on operation mode, compressor speed, outdoor air temperature (OAT) and heat sink temperature (HST).

Routine	Conditions
A	Heating with OAT < 15ºC or Cooling with OAT > 20ºC, or Faulty OAT
B	Cooling with 20ºC > OAT > 7ºC
C	Cooling with 7ºC > OAT
D	Heating with OAT > 15ºC

	OFAN Speed			
Compressor Target Frequency	Routin A	Routin B	Routin C	Routin D
Freq=0	OFF	OFF	OFF	OFF
10 ≤ Freq < *OFLowFreq*	Low	Low	VL	Low
OFLowFreq ≤ Freq< *OFMedFreq*	Medium	Low	VL	Low
OFMedFreq≤ Freq	High	Low	Low	Medium



Note: Periorities A>B>C



***(*1)** If State C, change to B*
If State B, change to A

When compressor is switched to OFF and the heat sink temperature is above 55 degrees, the outdoor fan will remain ON in low speed for up to 3 minutes.

11.5 EEV (Electronic Expansion Vavle) Control

EEV Control for DCI72/80

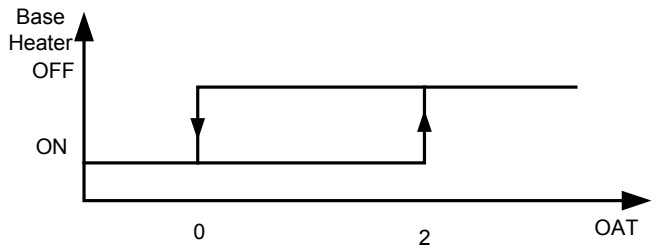
EEV opening is defined as EEV = EEV_{OL} + EEV_{CV}
EEV_{OL} is the initial EEV opening as a function of the compressor frequency, operation mode, unit model and capacity.
EEV_{CV} is a correction value for the EEV opening that is based on the compressor temperature.
During the first 5 minutes of compressor operation EEV_{CV} = 0.
Once the first 5 minutes are over, the correction value is calculated as follow: $EEV_{CV}(n) = EEV_{CV}(n-1) + EEV_{CTT}$
EEV_{CTT} is the correction based on the compressor temperature. A target compressor temperature is set depending on frequency and outdoor air temperature, and the actual compressor temperature is compared to the target temperature to set the required correction to the EEV opening.

11.6 RV(Reversing Valve) Control

Reversing valve is on in heat mode.
Switching of RV state is done only after compressor is off for over 3 minutes.

11.7 Base Heater Control

The base heater will be working only when RV is “ON” according to the following graph:



When OAT is faulty the base heater will be “ON” continuously in HEAT mode.

11.8 Fan Mode

In high/ medium/ low indoor fan user setting, unit will operate fan in selected speed.
In AutoFan user setting, fan speed will be adjusted automatically according to the difference between actual room temperature and user set point temperature.

11.9Cool Mode

NLOAD is calculated according to the difference between actual room temperature and user set point temperature by fuzzy control.
In high/ medium/ low indoor fan user setting, unit will operate fan in selected speed.
In AutoFan user setting, fan speed will be adjusted automatically according to the calculated NLOAD.

11.10 Heat Mode

NLOAD is calculated according to the difference between actual room temperature and user set point temperature by fuzzy control.
In high/ medium/ low indoor fan user setting, unit will operate fan in selected speed.
In AutoFan user setting, fan speed will be adjusted automatically according to the calculated NLOAD.

11.10.1 Temperature Compensation

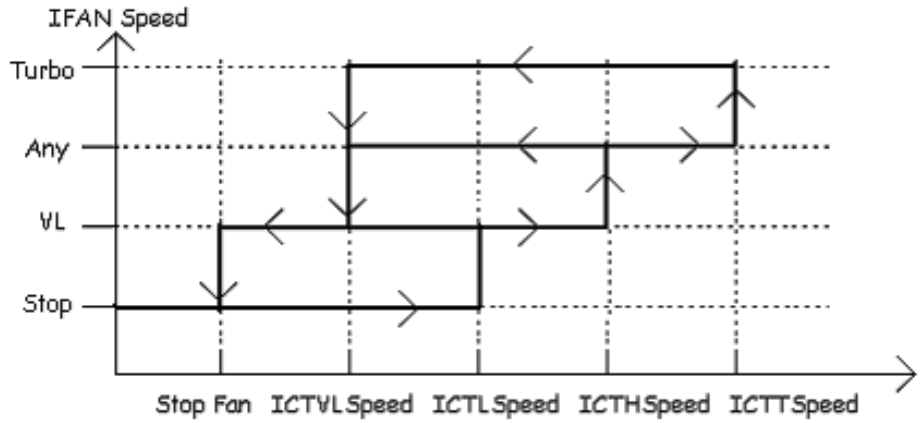
In wall mounted, ducted, and cassette models, 3 degrees are reduced from room temperature reading (except when in I-Feel mode), to compensate for temperature difference between high and low areas in the heated room, and for coil heat radiation on room thermistor.
The temperature compensation can be enabled/disabled by shortening of J2 on the indoor unit

Controller

Model	J2 Shorted(ON)	J2 Opened(OFF)
Wall mounted	Compensation Disabled	Compensation Enabled
Cassette	Compensation Enabled	Compensation Disabled
Ducted	Compensation Enabled	Compensation Disabled
Floor/Ceiling	Compensation Disabled	Compensation Enabled

11.10.2 Indoor Fan Control in Heating Mode

Indoor fan speed depends on the indoor coil temperature:



11.11 Auto Cool/Heat Mode

When in auto cool heat mode unit will automatically select between cool and heat mode according to the difference between actual room temperature and user set point temperature (.T).
Unit will switch from cool to heat when compressor is off for 3 minutes, and .T < -3.
Unit will switch from heat to cool when compressor is off for 5 minutes, and .T < -3.

11.12 Dry Mode

As long as room temperature is higher then the set point, indoor fan will work in low speed and compressor will work between 0 and *MaxNLOADIF1C* Hz.
When the room temperature is lower than the set point, compressor will be switched OFF and indoor fan will cycle 3 minutes OFF, 1 minute ON.

11.13 Protections

There are 5 protection codes.
Normal (Norm) – unit operate normally.
Stop Rise (SR) – compressor frequency can not be raised but does not have to be decreased.
HzDown1 (D1) – Compressor frequency is reduced by 2 to 5 Hz per minute.
HzDown2 (D2) – Compressor frequency is reduced by 5 to 10 Hz per minute.
Stop Compressor (SC) – Compressor is stopped.

11.13.1 Indoor Coil Defrost Protection

Min(ICT,ICTE)	Trend				
	Fast Increasing	Increasing	No Change	Decreasing	Fast Decreasing
< -2	SC	SC	SC	SC	SC
[-2, 0)	D1	D1	D2	D2	D2
[0, 2)	SR	SR	D1	D2	D2
[2, 4)	SR	SR	SR	D1	D2
[4, 6)	Norm	Norm	SR	SR	D1
[6, 8]	Norm	Norm	Norm	SR	SR
> 8	Norm				

11.13.2 Indoor Coil Overheating Protection

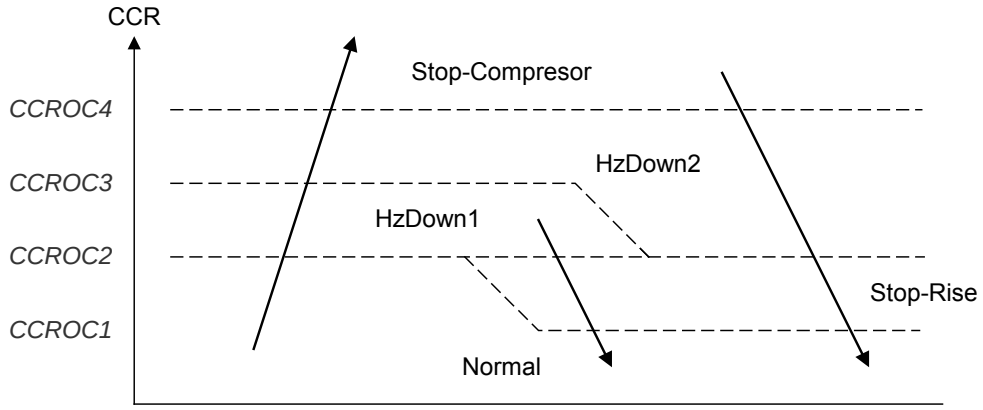
ICT	ICT Trend				
	Fast Decreasing	Decreasing	No Change	Increasing	Fast Increasing
>62	SC	SC	SC	SC	SC
[60, 62)	D1	D1	D2	D2	D2
[55, 60)	SR	SR	D1	D2	D2
[52, 55)	SR	SR	SR	D1	D2
[48, 52)	Norm	Norm	SR	SR	D1
[45, 48)	Norm	Norm	Norm	SR	SR
I<45	Norm				

11.13.3 Compressor Overheating Protection

Compressor Overheating Protection for DCI72/80

CTT		CTT Trend				
Cool	Heat	Fast Decreasing	Decreasing	No Change	Increasing	Fast Increasing
CTT>*105*	CTT>*105*	SC	SC	SC	SC	SC
100≤CTT<*105*	*100*≤CTT<*105*	D1	D1	D2	D2	D2
98≤CTT<*100*	*95*≤CTT<*100*	SR	SR	D1	D2	D2
93≤CTT<*100*	*85*≤CTT<*95*	SR	SR	SR	D1	D1
90≤CTT≤*93*	*80*≤CTT≤*85*	Norm	Norm	Norm	SR	SR
CTT <*90*	CTT<*80*	Norm				

Compressor Over Current Protection Only For DCI72/80



11.13.4 Heat Sink Overheating Protection

Heat Sink Overheating Protection For DCI72/80

HST	Delta HST				
	<-2	-2	-1,0,1	2	>2
HST≥ *81*	SC	SC	SC	SC	SC
79 ≤ HST < *81*	D1	D1	D2	D2	D2
75 ≤ HST < *79*	SR	SR	D1	D2	D2
73≤ HST< *75*	SR	SR	SR	D1	D1
71 ≤ HST ≤ *73*	Norm	Norm	SR	SR	SR
HST < *71*	Norm				

11.13.5 System Over Power Protection For *DCI72/80*

Power		Delta PWR				
		< -2000	[-2000,0)	0	(0,2000]	> 2000
PWR1	PWR2					
PWR ≥ *3500*	PWR ≥ *2900*	SC	SC	SC	SC	SC
3300≤PWR < *3500*	*2750*≤PWR<*2900*	D1	D1	D2	D2	D2
3100 ≤PWR <*3300*	*2600*≤PWR<*2750*	SR	SR	D1	D2	D2
3000≤PWR < *3100*	*2450*≤PWR<*2600*	SR	SR	SR	D1	D1
2950 ≤PWR ≤*3000*	*2300* ≤PWR≤*2450*	Norm	Norm	Norm	SR	SR
PWR < *2950*	PWR < *2300*	Norm				

There are two sets of OVRPWR values, the selection of the values are set according to the state of the Power-Shed input.
Power-Shed input open → Set values 1
Power-Shed input sort → Set values 2

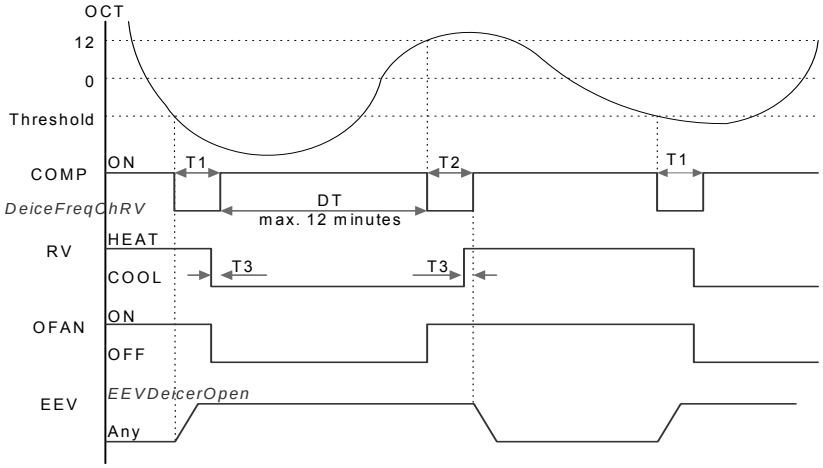
11.13.6 Outdoor Coil Deicing Protection

Outdoor coil Deicing Protection For DCI72/80

- **Entering Deicing Conditions**

Deicing operation will start when either one of the following conditions exist:
Case 1: OCT < OAT – 8 AND TLD > DI
Case 2: OCT < OAT – 12 AND TLD > 30 minutes.
Case 3: OCT is Invalid AND TLD > DI
Case 4: Unit is just switched to STBY AND OCT < OAT – 8
Case 5: NLOAD = 0 AND OCT < OAT -8
Case 6: OCT<-19 AND TLD>*60* minutes
All this condition will exist during 10 seconds
OCT – Outdoor Coil Temperature
OAT – Outdoor Air Temperature
TLD – Time from Last Deicing
DI – Deicing Interval (Time Interval Between Two Deicing)
Deicing interval time when compressor is first started in heat mode, is 10 minutes if OCT < -2, and is 40 minutes in other cases.
Deicing interval time is changed (increased/ decreased in 10 minutes steps) as a function of deicing time. If deicing time is shorter then former deicing time, the deicing interval time will be increased. If deicing time is longer then former deicing time, the deicing interval time will be decreased.

- **Deicing Operation Procedure**

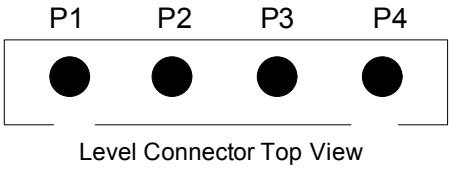


T1=60 secondes;T2=36 secondes;T3=6 secondes

T1=50 secondes;T2=36 secondes;T3=6 secondes

11.13.7 Water Level Protection

Water Levels Desfinition:



Level Connector Top View

P1	P2	P3	Level
Don't care	Don't care	1	Normal
Don't care	Don't care	0	Overflow

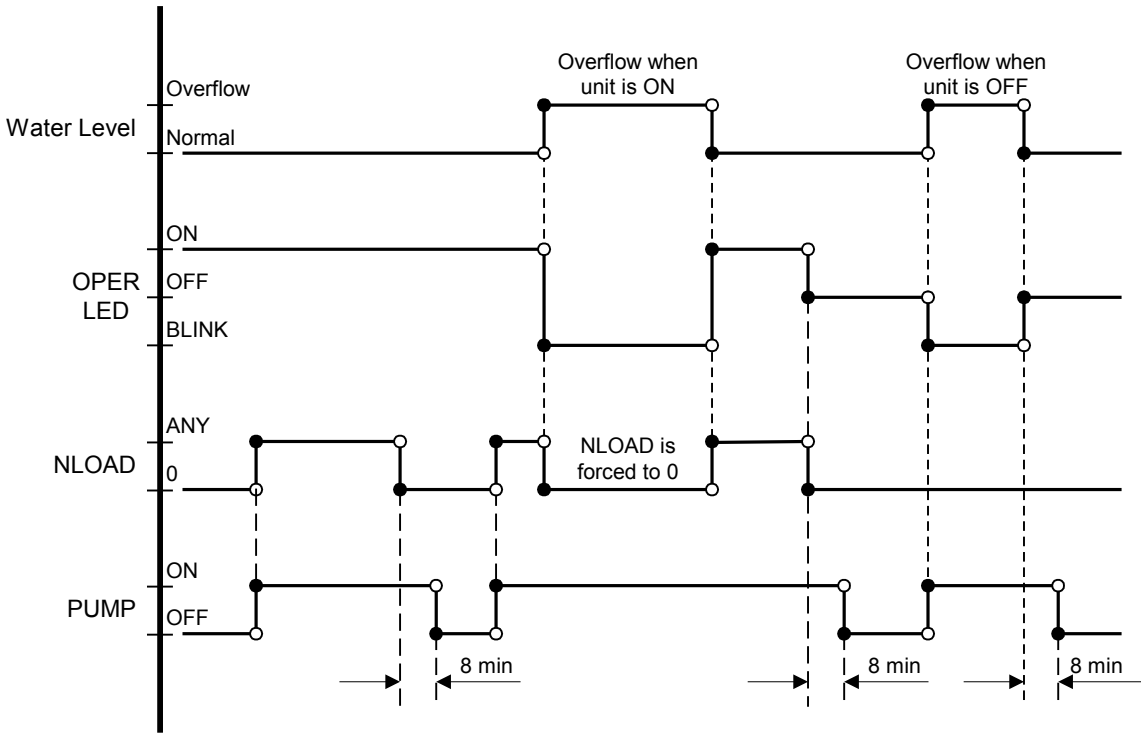
(*) 1- Pin P1, P2, or P3 is connected to P4.

0- Pin P1, P2 or P3 is not connected to P4.

The "overflow" condition activates the water pump in FAN,HEAT,and Auto(at heat) modes.

Indoor coil condensation
Mode: Cool, Dry, Auto (at cool)
Temp: Selected desired temperature
Fan: Any
Timer: Any
I FEEL: Any

Control function: Prevent Condensed water from overflowing.



11.14 Operating the Unit from Mode Button (On displayer)

Forced operation allows to start, stop and operate in Cooling or Heating, in pre-set temperature according to the following table:

Forced operation Mode	Pre-set Temperature
Cooling	20ºC
Heating	28ºC

11.15 On Unit Controls and Indicators

Indoor Unit controller Controls and Indicatiors for All Models Except for Floor/Ceiling model

During OFF, Fan, Cool, Heat, Dry, and Auto modes (for operation in other modes, see at the relevant spec paragraph):

STAND BY / OPERATION INDICATION
- Lights up in red when the Air Conditioner is connected to power and ready to receive the R/C commands
- Lights up in green during operations
- Blinks up when compressor is stoped as a result of a thermodynamic protection.

ESF/INOIZER INDICATOR
- Dummy function (just for diagnostic test)

TIMER INDICATOR
- Lights up during Timer and Sleep operation.
- Blinks when the timer setting is invalid when power failure is occurred.

FILTER INDICATOR
- Lights up when the filter needs to be cleaned

UNIT MODE BUTTON / RESET BUTTON
- Every short pressing , the next operation mode is selected, in this order : SB → Cool Mode → Heat Mode → SB → …
- In long pressing the system enters into diagnostic mode.
- RESET function:

  When filter LED is on-turn off the FILTER INDICATOR after a clean filter has been reinstalled.

  When Filter LED is off-enable/disable the buzzer announcer, if selected.

  In loog pressing system enters set up mode(if in SB)

Outdoor Unit controller Indicatiors

Unit has three LED's.
SB LED is ON when power is ON (230 VAC, even when no communication).
STATUS LED is ON when COMP is ON, and Blinks according to diagnostics mode definitions when either fault or protection occurs.
FAULT LED Blinks according to diagnostics mode definitions when either fault or protection occurs.

11.16 Jumper Settings

11.16.1 Indoor Unit Controller

Defanations:

Logic Input	Jumper (J)	DIP switch (D)
0	Open(Disconnected)	OFF
1	Close(Connected)	ON

Self Test Jumper(J1)
Jumper for production line check.

DIP Switch Settings

- **Compensation setting**

This setting activates the compensation to the return air temperature in heating mode. For indoor unit like cassette, the DIP switch J2 should be ON.

Compensation	J2
Activated *(factory setting)*	ON
Deactivated	OFF

- **Unit model setting (Factory setting)**

The unit model setting should be in accordance with the unit model on the nameplate. The unit operating parameters will be improper with wrong settings.

Unit model(Capacity)	J7	J8
7.2kW model	OFF	OFF
8.0kW model	ON	OFF

- **Presence Detector/Power Shedding Selection**

Select the functions of dry contact PD/PS by setting the Dip switch J9

Selection	J9
PresenceDetector ***(factory setting)***	OFF
Power Shedding	ON

- **Family Selection (J11)**

For **CKD DCI** series J11 should be on

Dry Contacts

- **Alarm Output**

The Alarm Output dry contact will be on (closed), when a predefined set faults occur.
The fault set is defined under diagnostics section.
The alarm output will be off (open), when the predefined fault is cleared.

The indoor alarm outputs are defined according to the following table:

No	Problem	AO	5	4	3	2	1
1	ICT is disconnected	Yes	0	0	0	0	1
2	ICT is shorted	Yes	0	0	0	1	0
3	RAT is disconnected	Yes	0	0	0	1	1
4	RAT is shorted	Yes	0	0	1	0	0
5	Reserved (for MSMP used as RGT fault)	No	0	0	1	0	1
6	ICTE shorted/disconnected (when enabled)	Yes	0	0	1	1	0
7	Undefined IDU family/model	Yes	0	0	1	1	1
8	No Communication	Yes	0	1	0	0	0
9	No Encoder	No	0	1	0	0	1
10	Reserved	No	0	1	0	1	0
11	Outdoor Unit Fault	No	0	1	0	1	1
…	Reserved	No					
17	Defrost protection	No	1	0	0	0	1
18	Deicing Protection	No	1	0	0	1	0
19	Outdoor Unit Protection	No	1	0	0	1	1
20	Indoor Coil HP Protection	No	1	0	1	0	0
21	Overflow Protection	Yes	1	0	1	0	1
22	Reserved	No					
24	EEPROM Not Updated	No	1	1	0	0	0
25	Bad EEPROM	No	1	1	0	0	1
26	Bad Communication	No	1	1	0	1	0
27	Using EEPROM data	No	1	1	0	1	1
28	Model A	No	1	1	1	0	0
29	Model B	No	1	1	1	0	1
30	Model C	No	1	1	1	1	0
31	Model D	No	1	1	1	1	1

Notes:

1. Only one code is shown. Order of priority is lower to the higher number. Diagnostics is continuously ON as long power is on.
2. The following case describes the LEDs used to present diagnostics and the indication:

	Stand BY / Operation LED	Indoor Diagnostics indicated by	Outdoor Diagnostics indicated by
CKD DCI	Use stand by / operation LED	standby/operation will be off ,Filter/Timer are blinking during indoor diagnostics	standby/operation and ESF/ INOIZER will be on, Filter/Timer are blinking during outdoor diagnostics

The outdoor alarm outputs are defined in the following way:

No	Problem	AO	5	4	3	2	1
1	OCT is disconnected	Yes	0	0	0	0	1
2	OCT is shorted	Yes	0	0	0	1	0
3	CTT is disconnected	Yes	0	0	0	1	1
4	CTT is shorted	Yes	0	0	1	0	0
5	HST is disconnected (when enabled)	Yes	0	0	1	0	1
6	HST is shorted (when enabled)	Yes	0	0	1	1	0
7	OAT is disconnected (when enabled)	Yes	0	0	1	1	1
8	OAT is shorted (when enabled)	Yes	0	1	0	0	0
9	TSUC is disconnected (when enabled)	Yes	0	1	0	0	1
10	TSUC is shorted (when enabled)	Yes	0	1	0	1	0
11	IPM Fault	Yes	0	1	0	1	1
12	Bad EEPROM	No	0	1	1	0	0
13	DC under voltage	Yes	0	1	1	0	1
14	DC over voltage	Yes	0	1	1	1	0
15	AC under voltage	Yes	0	1	1	1	1
16	Mismatch between IDU & ODU models	Yes	1	0	0	0	0
17	No Communication	Yes	1	0	0	0	1
18	Reserved	No	1	0	0	1	0
20	Heat sink Over Heating	No	1	0	1	0	0
21	Deicing	No	1	0	1	0	1
22	Compressor Over Heating	No	1	0	1	1	0
23	Compressor Over Current	No	1	0	1	1	1
24	No OFAN Feedback	No	1	1	0	0	0
25	OFAN locked	Yes	1	1	0	0	1
26	Compressor Lock	Yes	1	1	0	1	0
27	Bad Communication	No	1	1	0	1	1
28	Missing ODU configuration	Yes	1	1	1	0	0
29	Undefined ODU Model	Yes	1	1	1	0	1
30	For future use	No	1	1	1	1	0
31	Operation condition is exceeded	Yes	1	1	1	1	1

- **Unit ON Output**

The ‘On/Off status’ dry contact will be on (closed), when the indoor mode is not STBY. If the indoor mode is STBY mode, the ‘On/Off status’ will be off (open).

- **PD/PS(Presence Detector/Power Shedding) ther**

	Function	Contact=open	Contact=short
J9=OFF	Presence Detector Connection	No limit	Force to STBY
J9=ON	Power Shedding Function	No limit	Limit NLOAD

11.16.2 Outdoor Unit Controller

JP9 Dip switch setting

ODU Model Selection

ODU3(DIP1)	ODU2(DIP1)	ODU1(DIP1)	ODU0(DIP1)	ODU Model
OFF	OFF	OFF	OFF	Reserved
OFF	OFF	OFF	ON	A (Single DCI 25)
OFF	OFF	ON	OFF	B (Single DCI35)

11.17 Test Mode

11.17.1 Entering Test Mode

System can enter Test mode in two ways:
Automatically when the following conditions exists for 30 minutes continuously:
Mode = Cool, Set point = 16, Room temperature =)27(+2/-1) Outdoor temperature = 35(+2/-1)
Or
Mode = Heat, Set point = 30, Room temperature = 20±1, Outdoor temperature = 7±(+1/-2)
Manually when entering diagnostics with the following settings:
Mode = Cool, Set point = 16
Mode = Heat, Set point = 30

11.17.2 Unit Operation in Test Mode

In test mode, the unit will operate in fixed settings according to the indoor fan speed setting:

Indoor FAN Speed Setting	Unit Setting
Low	Minimum Capacity Setting
High	Nominal Capacity Setting
Auto	Maximum Capacity Setting

During test mode, protections are disabled, except for stop compressor status.

11.18 SW Parameters

11.18.1 Indoor Units SW Parameters

Model dependent parameters

CKD DCI Family

	A (CKD025)	B (CKD030)
IFVLOWC	**NA**	**NA**
IFLOWC	**NA**	**NA**
IFMEDC	**NA**	**NA**
IFHIGHC	**NA**	**NA**
IFTURBOC	**NA**	**NA**
IFVLOWH	**NA**	**NA**
IFLOWH	**NA**	**NA**
IFMEDH	**NA**	**NA**
IFHIGHH	**NA**	**NA**
IFTURBOH	**NA**	**NA**
Cap .Group	**4**	**4**
NomLoadC	**61**	**70**
NomLoadH	**59**	**70**
MaxNLOADIF1C	**44**	**85**
MaxNLOADIF2C	**50**	**102**
MaxNLOADIF3C	**127**	**127**
MaxNLOADIF4C	**127**	**127**
MaxNLOADIF5C	**127**	**127**
IFAN_SPEED_COMP0_C	**0**	**0**
IFAN_SPEED_COMP1_C	**0**	**0**
IFAN_SPEED_COMP2_C	**0**	**0**
IFAN_SPEED_COMP3_C	**0**	**0**
IFAN_SPEED_COMP0_H	**0**	**0**
IFAN_SPEED_COMP1_H	**0**	**0**
IFAN_SPEED_COMP2_H	**0**	**0**
IFAN_SPEED_COMP3_H	**0**	**0**
ModelEnable	**1**	**1**

11.18.2 Outdoor Units SW Parameters

Model dependent parameters for *DCI72Z*

Compressor Parameters	Value
MinOFFTime	3
MinOnTime	3
MaxCTT1	90
MaxCTT2	90
MinSpeedAsCTT1	26
MinSpeedAsCTT2	26
MaxSpeedC	75
MaxSpeedH	95
Step1RPS	40
Step2RPS	60
Step3RPS	75
NormAcc (sec/RPS)	1
NormDec (sec/RPS)	1
Down1(Sec/RPS)	12
Down2 (Sec/RPS)	7
DeiceAcc (Sec/RPS)	0.2
DeiceDec (Sec/RPS)	0.5

EEV Parameters	Value
NormEEVRate	30
EEVCompOFFOpen	200
EEVCompOFFTime	60
EEVMaxOpen	500
EEVMinOperOpenC	60
EEVMaxOperOpenC	500
EEVMinOperOpenH	70
EEVMaxOperOpenH	500
EEVMinOperOpenHInIDU	60
EEVMaxOperOpenHInIDU	140
EEVIDUOFFOpen	130
EEVMoveSteps	20
EEVTConstC	30
EEVTConstH	30
BlncTimTrnsStC	1
BlncTimStdyStC	1
BlncTimTrnsStH	1
BlncTimStdyStH	1
CompOffTimToTrnsSt	20

Model dependent parameters for *DCI80Z*

№	Name	P (DCI80)
1	*MinFreqC*	15
2	*MaxFreqC*	75
3	*MinFreqH*	15
4	*MaxFreqH*	90
5	*LoadDeadZone*	In Text
6	*ODUCodeC*	In Text
7	*ODUCodeH*	In Text
8	*EEVBase*	In Text
9	*EEVCpctyCrct*	In Text
10	*Step1Freq*	40
11	*Step2Freq*	60
12	*Step3Freq*	75
13	*OFMinRPM*	16
14	*OFMaxRPM*	90
15	*NightRPM*	60
16	*OFNNoiseMaxRPM*	78
17	*CTTOH1*	90
18	*CTTOH2*	95
19	*CTTOH3*	100
20	*CTTOH4*	105
21	*CCROC1*	13.5
22	*CCROC2*	14
23	*CCROC3*	15.0
24	*CCROC4*	15.6
25	*EEVMinOperOpenC*	50
26	*EEVMaxOperOpenC*	480
27	*EEVMinOperOpenH*	50
28	*EEVMaxOperOpenH*	480
29	*EEVMinOperOpenHInactive*	130
30	*EEVMaxOperOpenHInactive*	130
31	*HeaterDisableFlag*	0
32	*NormAccel*	1
33	*NormDecel*	1
34	*OCTExitDeicer*	12
35	*MaxDeicerTime*	15
36	*EEVDecierOpenSingle*	480
37	*EEVDecierOpenMulti*	160
38	*DeicerCoef*	*0.8*
39	*EEV_Active_H_Isotherm*	*4*
40	*EEV_Active_H_SC*	*10*
41	*EEV_Active_H_SC_Crct*	*1*
42	*EnableExceedCond*	*0*
43	*OVRPWR1*	*3050*
44	*OVRPWR2*	*3150*
45	*OVRPWR3*	*3200*
46	*OVRPWR4*	*3300*
47	*OVRPWR5*	*3400*
48	*OVRPWRPS1*	*2300*
49	*OVRPWRPS2*	*2450*
50	*OVRPWRPS3*	*2600*
51	*OVRPWRPS4*	*2750*
52	*OVRPWRPS5*	*2900*
53	*OVRPWRTcnst*	*5*
54	*MinSumCapCode1*	2
55	*MinSumCapCode2*	2
56	*MinSumCapCode3*	2
57	*MinSumCapCode4*	2
58	*MaxSumCapCode1e*	2
59	*MaxSumCapCode2*	4
60	*MaxSumCapCode3*	5
61	*MaxSumCapCode4*	6
62	*Max_IDU_Number*	4
63	*InstTestCompSpeed*	35
64	*InstTestEEV*	180

12. TROUBLESHOOTING

WARNING!!!

When Power Up – the whole outdoor unit controller, including the wiring, is under HIGH VOLTAGE!!!
Never open the Outdoor unit before turning off the Power!!!
When turned off, the system is still charged (400V)!!!
It takes about 3 Min. to discharge the system.
Touching the controller before discharging may cause an electrical shock!!!

For safe handling of the controller please refer to section 12.6 below.
ATTENTION : check for broken or loose cable lugs first.

12.1 Single Split System failures and Corrective Actions

No	SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
1	Power supply indicator (Red LED) does not light up.	No power supply	Check power supply. If power supply is OK, check display and display wiring. if OK, replace controller.
2	Unit does not respond to remote control message	Remote control message not reached the indoor unit	Check remote control batteries, if batteries are OK, check display and display wiring, if OK, replace display PCB. If still not OK replace controller.
3	Unit responds to remote control message but Operate indicator (Green LED) does not light up	Problem with display PCB	Replace display PCB. If still not OK replace controller.
4	Indoor fan does not start (louvers are opened and Green LED does light up)	Unit in heat mode and coil is still not warm.	Change to cool mode and check.
		Problem with PCB or capacitor	Change to high speed and Check power supply to motor is higher than 130VAC (for triack controlled motor) or higher than 220VAC for fixed speed motors, if OK replace capacitor, if not OK replace controller
5	Indoor fan works when unit is OFF, and indoor fan speed is not changed by remote control command.	PCB problem	Replace controller
6	Compressor does not start	Electronics control problem or protection	Perform diagnostics (See 12.3 below), and follow the actions described.
7	Compressor stops during operation and Green LED remains on	Electronic control or power supply problem	Perform diagnostics (See 12.3 below), and follow the actions described.
8	Compressor is on but outdoor fan does not work	Problem with outdoor electronics or outdoor fan	Check outdoor fan motor according to the procedure in section 12.5.3 below, if not OK replace controller
9	Unit works in wrong mode (cool instead of heat or heat instead of cool)	Electronics or power connection to RV	Check RV power connections, if OK, Check RV operation with direct 230VAC power supply, if OK, Replace outdoor controller.
10	All components are operating properly but no cooling or no heating	Refrigerant leak	Check refrigeration system.
11	Compressor is over heated and unit does not generate capacity	EEV problem	Check EEV

No	SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
12	Units goes into protections and compressor is stopped with no clear reason	Control problem or refrigeration system problem	Perform diagnostics (See 12.3 below), and follow the actions described.
13	Compressor motor is generating noise and no suction occurs	Phase order to compressor is wrong	Check compressor phase order.
14	Water leakage from indoor unit	Indoor unit drainage tube is blocked	Check and open drainage tube.
15	Freezing of outdoor unit in heat mode and outdoor unit base is blocked with ice		Connect base heater.
16	Unit operates with wrong fan speeds or wrong frequency	Wrong jumper settings	Perform diagnostics (See 12.3 below), and check if units is operating by EEPROM parameters.

12.2 Checking the refrigeration system

Checking system pressures and other thermodynamic measures should be done when system is in Test Mode (in Test mode, system operates in fixed settings). The performance curves given in this manual are given for unit performance in test mode when high indoor fan speed is selected.
Entering test mode:
Set unit to Cool/16 degrees/High indoor fan speed, or Heat/30 degrees/High indoor fan speed, and enter diagnostics.

12.3 Judgment by Indoor/Outdoor Unit Diagnostics

Enter diagnostics mode - press for five seconds Mode button in any operation mode. Acknowledgment is by 3 short beeps and lights of COOL and HEAT LED's. Then, every short pressing of Mode button will scroll between Indoor and Outdoor unit diagnostic modes by the acknowledgment of 3 short beeps and lighting of COOL and HEAT LED's.

During the Outdoor unit diagnostics all four Indoor LED's (STBY, Operate, Filter and Timer) are blinking. When Indoor diagnostics is displayed, all four LED's (STBY, Operate, Filter and Timer) are ON.

When system enters diagnostics mode, only one fault code is shown. Order of priority is from the lower to the higher number. Diagnostics is continuously ON as long as power is ON. The current system operation mode will not be changed.
If no fault occurred in the system, no fault code will be displayed during normal operation mode. The last fault code will be displayed even if the system has recovered from that fault. The last fault will be deleted from the EEPROM after the system has exit diagnostics mode.

In diagnostics mode, system fault / status will be indicated by blinking of Heat & Cool LEDs.
The coding method will be as follows:
Heat LED will blink 5 times in 5 seconds, and then will be shut off for the next 5 seconds. Cool LED will blink during the same 5 seconds according to the following Indoor / Outdoor unit tables:
Note: 0 – OFF, 1-ON

12.3.1 Indoor Unit Diagnostics

No	Problem	5	4	3	2	1
1	RT-1 is disconnected	0	0	0	0	1
2	RT-1 is shorted	0	0	0	1	0
3	RT-2 is disconnected	0	0	0	1	1
4	RT-2 is shorted	0	0	1	0	0
5	Reserved	0	0	1	0	1
7	Communication mismatch	0	0	1	1	1
8	No Communication	0	1	0	0	0
9	No Encoder	0	1	0	0	1
10	Reserved	0	1	0	1	0
11	Outdoor Unit Fault	0	1	0	1	1
…	Reserved					
17	Defrost protection	1	0	0	0	1
18	Deicing Protection	1	0	0	1	0
19	Outdoor Unit Protection	1	0	0	1	1
20	Indoor Coil HP Protection	1	0	1	0	0
21	Overflow Protection	1	0	1	0	1
22	Reserved					
24	EEPROM Not Updated	1	1	0	0	0
25	Bad EEPROM	1	1	0	0	1
26	Bad Communication	1	1	0	1	0
27	Using EEPROM data	1	1	0	1	1
28	Model A	1	1	1	0	0
29	Model B	1	1	1	0	1
30	Model C	1	1	1	1	0
31	Model D	1	1	1	1	1

12.3.2 Indoor Unit Diagnostics and Corrective Actions

No.	Fault	Probable Cause	Corrective Action
1	Sensor failures of all types		Check sensor connections or replace sensor
2	Communication mismatch	Indoor and Outdoor controllers are with different versions	Replace Indoor controller
3	No Communication	Communication or grounding wiring is not good.	Check Indoor to Outdoor wiring and grounding
4	No Encoder	Indoor electronics or motor	Check motor wiring, if ok, replace motor, if still not ok, replace Indoor controller.
5	Outdoor Unit Fault	Outdoor controller problem	Switch to Outdoor diagnostics.
6	EEPROM Not Updated	System is using ROM parameters and not EEPROM parameters	No action, unless special parameters are required for unit operation.
7	Bad EEPROM		No action, unless special parameters are required for unit operation.
8	Bad Communication	Communication quality is low reliability	Check Indoor to Outdoor wiring and grounding
9	Using EEPROM data	No problem. System is using EEPRRRROM parameters	

No.	Fault	Probable Cause	Corrective Action
10	The power supply indicator (red led) doesn't light up.	There is no correct voltage between the line and neutral terminals on main P.C.B.	-If the voltage is low repair power supply. -If there is no voltage repair general wiring. -If there is correct voltage replace main or display P.C.B'S
11	The operating indicator (green led) does not light up.	The remote control batteries are discharged	-Replace batteries of the remote control
12	The operating indicator (green led) does not light up when starting from unit..	Check main P.C.B and display P.C.B.	-Replace P.C.B if necessary.
13	The indoor fan does not function correctly.	Check the voltage between indoor fan terminals on the main P.C.B	- If there is voltage replace capacitor or motor.
14	The outdoor fan does not function correctly.	Check the voltage between indoor fan terminals on the main P.C.B. There is voltage between outdoor fan terminals on the outdoor unit. There is no voltage between outdoor fan terminals on the outdoor unit.	- If there is no voltage replace main P.C.B - Replace capacitor or motor. - Check and repair electrical wiring between indoor and outdoor units.
15	The compressor does not start up.	Check voltage on compressor terminals on the outdoor unit. (with ampmeter) Check if there is correct voltage between compressor terminals on the outdoor unit.	-If no voltage replace main P.C.B. - If low voltage repair power supply. -If the voltage corrrect replace capacitor or compressor. -If there is no voltage repair electrical wiring between indoor and outdoor units.
16	The refrigeration system does not function correctly.	Check for leaks or restrictions, with ampmeter, pressure guage or surface thermometer.	- Repair refrigeration system and charge refrigerant if necessary.
17	No cooling or heating only indoor fan works.	Outdoor fan motor faulty or other fault caused, compresssor overload protection cut out.	-Replace P.C.B. - Outdoor fan blocked remove obstructions.
18	Only indoor fan and compressor working.	Outdoor fan blocked.	- Remove obstructions.
19	Only indoor fan working.	-Run capacitor of outdoor fan motor faulty. -Windings of outdoor fan are shorted.	- Replace capacitor. -Replace motor.
20	No cooling or heating takes place, indoor and outdoor fans working.	- Overload safety device on compressor is cut out (low voltage or high temperature) - Compressor run capacitor faulty. - Compressor windings are shorted.	- Check for proper voltage, switch off power and try again after one hour. - Replace compressor capacitor. - Replace compressor.

No.	Fault	Probable Cause	Corrective Action
21	No air supply at indoor unit, compressor operates.	-Indoor fan motor is blocked or turns slowly. -indoor fan run capacitor faulty. - motor windings are shorted.	- Check voltage,repair wiring if necessary. -Check fan wheel if it is tight enough on motor shaft,tighten if necessary. -Replace indoor fan motor.
22	Partial, limited air supply at indoor indoor unit.	Lack of refrigerant (will accompanied by whisteling noise) cause ice formation on indoor unit coil in cooling mode.	-Charge the unit after localizing leak.
23	Water accumulates and overflow from indoor unit section.	Drain tube or spout of drain pan clogged.	-Disasemble plastic drain tube from spout of indoor unit drain pan.
24	Water dripping from outdoor unit base. (in heating mode)	Water drain outlet is clogged.	-Open outdoor unit cover clean out water outlet ,clean the base inside througly.
25	Freeze-up of outdoor coil in heating mode, poor heating effect in room, indoor fan operates.	-Faulty outdoor thermistor. -Faulty control cable. - Outdoor temperature is too low (below -2°C) -Outdoor unit air outlet is blocked.	-Replace thermistor. - Repair control cable. - Shut unit off, outdoor temp. is below design conditions and cannot function properly. -Remove obstructions.

12.3.3 Outdoor Unit Diagnostics

No	Problem	5	4	3	2	1
1	OCT is disconnected	0	0	0	0	1
2	OCT is shorted	0	0	0	1	0
3	CTT is disconnected	0	0	0	1	1
4	CTT is shorted	0	0	1	0	0
5	HST is disconnected (when enabled)	0	0	1	0	1
6	HST is shorted (when enabled)	0	0	1	1	0
7	OAT is disconnected (when enabled)	0	0	1	1	1
8	OAT is shorted (when enabled)	0	1	0	0	0
9	TSUC is disconnected (when enabled)	0	1	0	0	1
10	TSUC is shorted (when enabled)	0	1	0	1	0
11	IPM Fault	0	1	0	1	1
12	Bad EEPROM	0	1	1	0	0
13	DC under voltage	0	1	1	0	1
14	DC over voltage	0	1	1	1	0
15	AC under voltage	0	1	1	1	1
16	Indoor / Outdoor unit Communication mismatch	1	0	0	0	0
17	No Communication	1	0	0	0	1
18	Reserved	1	0	0	1	0
20	Heat sink Over Heating	1	0	1	0	0
21	Deicing	1	0	1	0	1
22	Compressor Over Heating	1	0	1	1	0
23	Compressor Over Current	1	0	1	1	1
24	No OFAN Feedback	1	1	0	0	0
25	OFAN locked	1	1	0	0	1
26	Compressor Lock	1	1	0	1	0
27	Bad Communication	1	1	0	1	1

12.3.4 Outdoor Unit Diagnostics and Corrective Actions

No.	Fault	Probable Cause	Corrective Action
1	Sensors failures of all types		Check sensors connections or replace sensors.
2	IPM Fault	Electronics HW problem	Check all wiring and jumper settings, if OK, replace electronics.
3	Bad EEPROM		No action, unless special parameters are required for unit operation.
4	DC under/over Voltage	Electronics HW problem	Check outdoor unit power supply voltage
5	AC under Voltage		Check outdoor unit power supply voltage
6	Indoor / Outdoor unit Communication mismatch	Indoor and Outdoor controllers are with different versions	Replace Indoor controller
7	No Communication	Communication or grounding wiring is not good.	Check Indoor to Outdoor wiring and grounding
8	Compressor Lock		Switch unit to STBY and restart
9	Bad Communication	Communication quality is low reliability	Check Indoor to Outdoor wiring and grounding

12.4 Judgment by MegaTool

MegaTool is a special tool to monitor the system states.
Using MegaTool requires:
- A computer with RS232C port.
- A connection wire for MegaTool.
- A special MegaTool software.

Use MegaTool according to following procedure:
- Setup MegaTool software: copy the software to the computer.
- Connect RS232C port in computer with MegaTool port in Indoor/Outdoor unit controller by the connection wire.
- Run the software and choose the COM port, you can monitor the A/C system state in monitor tab.

12.5 Simple procedures for checking the Main Parts

12.5.1 Checking Mains Voltage.

Confirm that the Mains voltage is between 198 and 264 VAC. If Mains voltage is out of this range, abnormal operation of the system is expected. If in range check the Power (Circuit) Breaker and look for broken or loosed cable lugs or wiring mistake(s).

12.5.2 Checking Power Input.

If Indoor unit power LED is unlighted, power down the system and check the fuse of the Indoor unit. If the fuse is OK replace the Indoor unit controller. If the fuse has blown, replace the fuse and power up again.
Checking Power Input procedure for the Outdoor unit is the same as with the Indoor unit.

12.5.3 Checking the Outdoor Fan Motor.

Enter Test Mode (where the OFAN speed is high)
Check the voltage between lead wires according to the normal value as following:

- Between red wire and black wire: 310VDC +/- 20V
- Between orange wire and black wire: 15VDC +/- 1V
- Between yellow wire and black wire: 2-6VDC

12.5.4 Checking the Compressor.

The compressor is brushless permanence magnetic DC motor. Three coil resistance is same. Check the resistance between three poles. The normal value should be below 0.5 ohm (TBD).

12.5.5 Checking the Reverse Valve (RV).

Running in heating mode, check the voltage between two pins of reverse valve connector, normal voltage is 220VAC.

12.5.6 Checking the electrical expansion valve (EEV).

The EEV has two parts, drive part and valve. The drive part is a step motor; it is ringed on the valve. Check the drive voltage (12VDC). When Outdoor unit is power on, EEV shall run and have click and vibration.

12.6 Precaution, Advise and Notice Items

12.6.1 High voltage in Outdoor unit controller.

Whole controller, including the wires that are connected to the Outdoor unit controller may have the potential hazard voltage when power is on. Touching the Outdoor unit controller may cause an electrical shock.
Advise: Don't touch the naked lead wire and don't insert finger, conductor or anything else into the controller when power is on.

12.6.2 Charged Capacitors

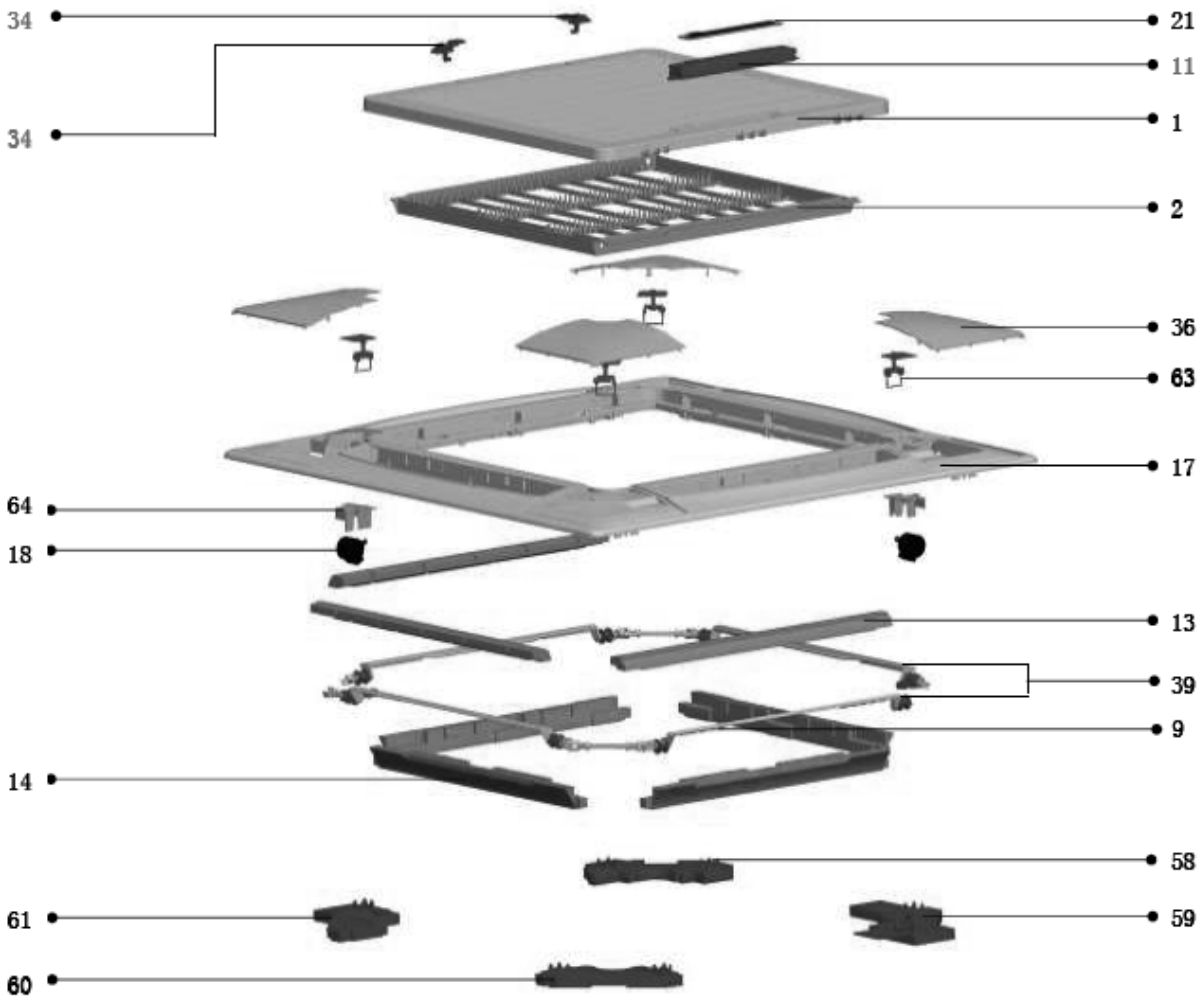
Three large-capacity electrolytic capacitors are used in the Outdoor unit controller. Therefore, charging voltage (380VDC) remains after power down. Discharging takes about four minutes after power is off. Touching the Outdoor unit controller before discharging may cause an electrical shock.

12.6.3 Additional advises

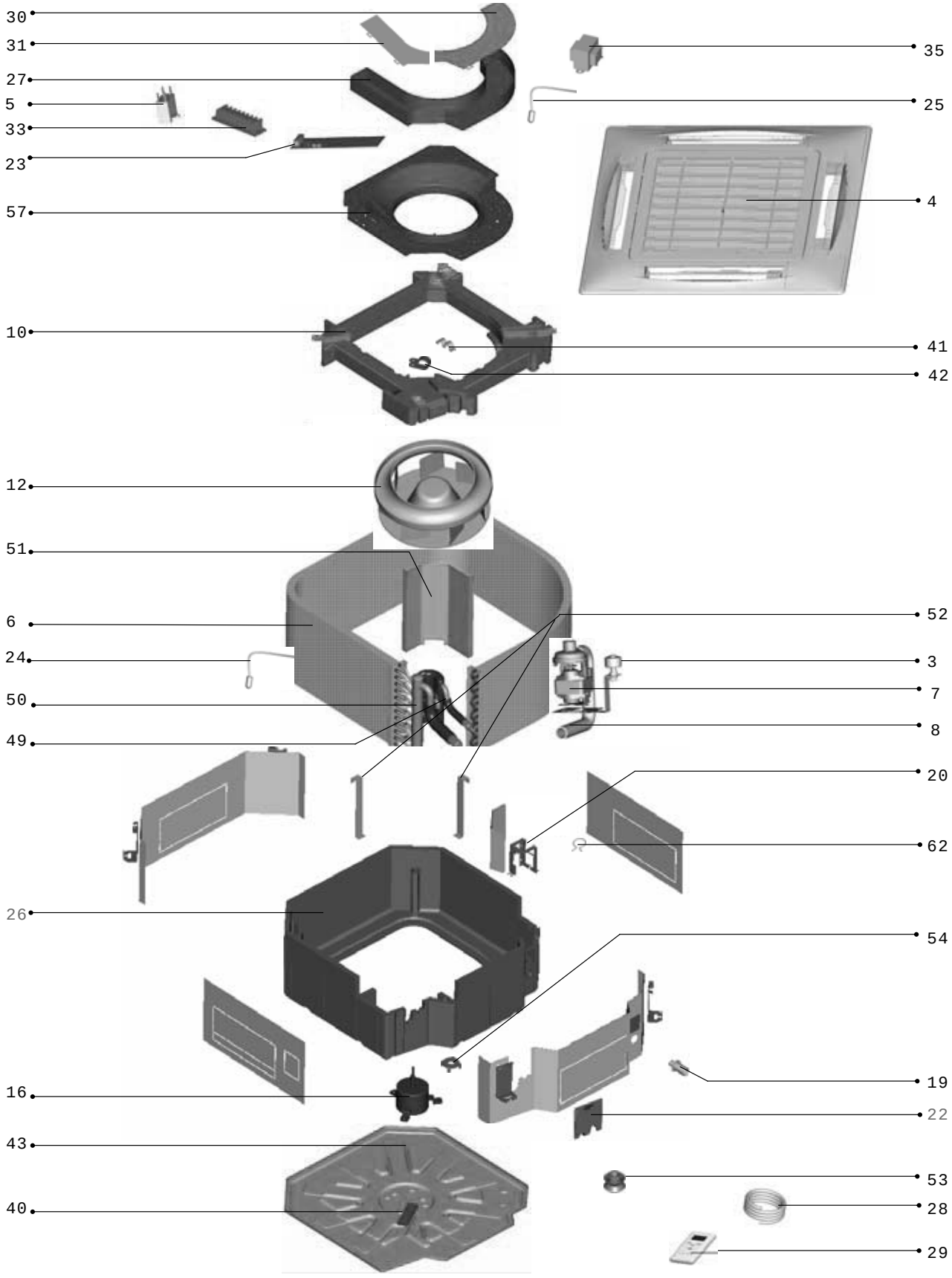
- When disassemble the controller or the front panel, turn off the power supply.
- When connecting or disconnecting the connectors on the PCB, hold the whole housing, don't pull the wire.
- There are sharp fringes and sting on shell. Use gloves when disassemble the A/C units.

13. EXPLODED VIEWS AND SPARE PARTS LISTS

13.1 Indoor Unit: CKD 025, CKD 030 DCI - Exploded View



13.2 Indoor Unit: CKD 025, CKD 030 DCI - Exploded View



13.3 Indoor Unit: CKD 025 DCI - Spare Part List

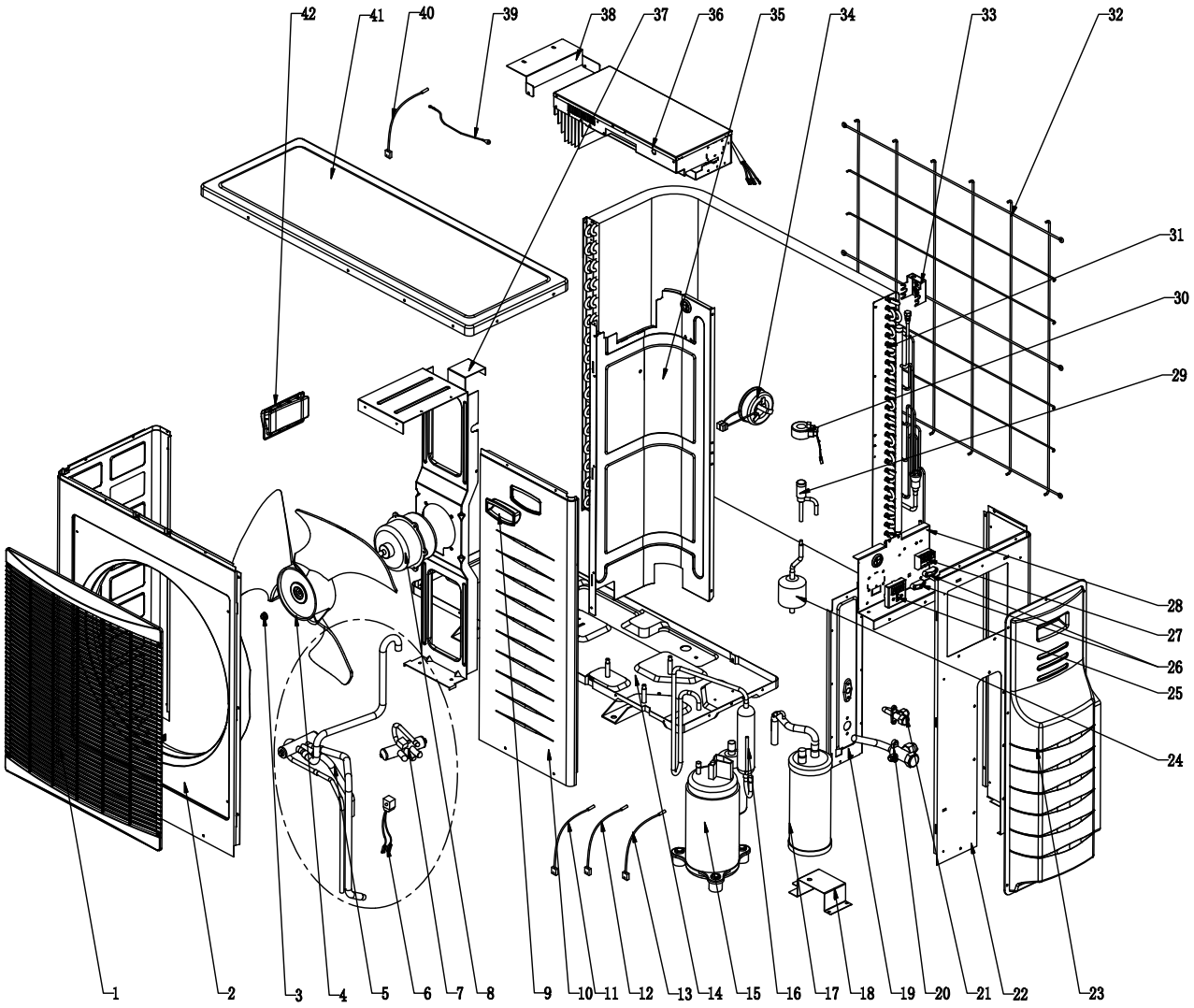
No.	Item	Description	Quan.
1	P0000371694	Grill/Airwell	1
2	P0000371695	Filter	1
3	202301300044	Water-Level Switch Assy.	1
4	201109990016	Front Panel/Airwell	1
5	202401100017	Capacitor For Fan Motor 3.5uF	1
6	201552390004	Evaporator Assy.	1
7	202400610001	Pump	1
8	202742000006	Drain Pipe	1
9	P0000146588	Flap	4
10	202242500075	Drain Pan Assy	1
11	P0000402822	Display Cover	1
12	201142000003	Centrifugal Fan	1
13	P0000146552	EPS 1 / Front Frame	4
14	P0000146553	EPS 2 / Front Frame	4
16	202400410851	Motor/Indoor Unit	1
17	P0000146543	Front Frame	1
18	202400100007	Step Motor	2
19	201142000002	Connecting Pipe/Drain Pipe	1
20	201242000003	Fixing Plate/Pump Assy.	1
21	467300128R	Display Board/CN	1
22	201242800078	Connection Support	1
23	467300222R	Controller/ DCI KN new	1
24	4523277	ICT SENSOR	1
25	4523278	RW SENSOR	1
26	202242500076	EPS/Air Housing Assy.	1
27	201242800091	Electric Control Box Welded Assembly	1
29	467200012R	Remote Controller	1
30	201242800085	Cover I/Electric Control box	1
31	201242800084	Cover II/Electric Control box	1
33	202301450029	Terminal Block(6 pole)	1
34	P0000146568	Grill Clasp Switch 1	1
34	P0000146569	Grill Clasp Switch 2	1
35	4523162	Transformer Assy.	1
36	P0000146557	Cover /Front Plate	4
39	P0000146556	Flap Swing Assy.	1
40	201242500081	Plate/Wire	1
41	201242800082	Tandem/Wire	1
42	201102020216	Bipitch Wire Clip	1
43	201242500080	Base Pan Welded Assembly	1
49	201652390015	Liquid Pipe Assy.	1
50	201642590022	Gas Pipe Assy./13.88	1
51	201242500082	Fixing Plate/Evaporator	1
52	201242500083	Hook/Evaporator	3
53	202742000002	Cushion Rubber/Pump	3
54	201242000008	Fan Fixer	1
57	201142800079	Air Intake Assy.	1
58	P0000146558	Cover1 /Front Plate	1
59	P0000146559	Cover2 /Front Plate	1
60	P0000146560	Cover3 /Front Plate	1
61	P0000146561	Cover4 /Front Plate	1
62	201242000013	Grommet/Drain Pipe	1
63	P0000146555	Hook Assy.	4
64	P0000146594	Support/Step Motor	2

13.4 Indoor Unit: CKD 030 DCI - Spare Part

No.	Item	Description	Quan.
1	P0000371694	Grill/Airwell	1
2	P0000371695	Filter /NKN	1
3	202301300044	Water-Level Switch Assy.	1
4	201109990016	Front Panel/Airwell	1
5	202401100017	Capacitor For Fan Motor 3.5uF	1
6	201552390005	Evaporator Assy./NKN80	1
7	202400610001	Pump	1
8	202742000006	Drain Pipe	1
9	P0000146588	Flap	4
10	202242800075	Drain Pan Assy	1
11	P0000402822	Display Cover	1
12	201142000601	Centrifugal Fan	1
13	P0000146552	EPS 1 / Front Frame	4
14	P0000146553	EPS 2 / Front Frame	4
16	202400410850	Motor/Indoor Unit	1
17	P0000146543	Front Frame	1
18	202400100007	Step Motor	2
19	201142000002	Connecting Pipe/Drain Pipe	1
20	201242000605	Fixing Plate/Pump Assy.	1
21	467300128R	Display Board/CN	1
22	201242800078	Connection Support	1
23	467300222R	Controller/ DCI KN new	1
24	4523277	ICT SENSOR	1
25	4523278	RW SENSOR	1
26	202242800076	EPS/Air Housing Assy.	1
27	201242800091	Electric Control Box Welded Assembly	1
29	467200012R	Remote Controller	1
30	201242800085	Cover I/Electric Control Box	1
31	201242800084	Cover II/Electric Control Box	1
33	202301450029	Terminal Block(6 Pole)	1
35	4523162	Transformer ASSY.	1
34	P0000146568	Grill Clasp Switch 1	1
34	P0000146569	Grill Clasp Switch 2	1
36	P0000146557	Cover /Front Plate	4
39	P0000146556	Flap Swing Assy.	1
40	201242500081	Plate/Wire	1
41	201242800082	Tandem/Wire	1
42	201102020216	Bipitch Wire Clip	1
43	201242800081	Base Pan Welded Assembly	1
49	201652390017	Liquid Pipe Assy.	1
50	201652390018	Gas Pipe Assy./NKN80	1
51	201242800086	Fixing Plate/Evaporator	1
52	201242800087	Hook/Evaporator	3
53	202742000002	Cushion Rubber/Pump	3
54	201242000008	Fan Fixer	1
57	201142690001	Air Intake Assy.	1
58	P0000146558	Cover1 /Front Plate	1
59	P0000146559	Cover2 /Front Plate	1
60	P0000146560	Cover3 /Front Plate	1
61	P0000146561	Cover4 /Front Plate	1
62	201242000013	Grommet/Drain Pipe	1
63	P0000146555	Hook Assy.	4
64	P0000146594	Support/Step Motor	2

13.5 Outdoor Units: DCI 72Z - Exploded View

13.5.1 Outdoor Unit General Assembly

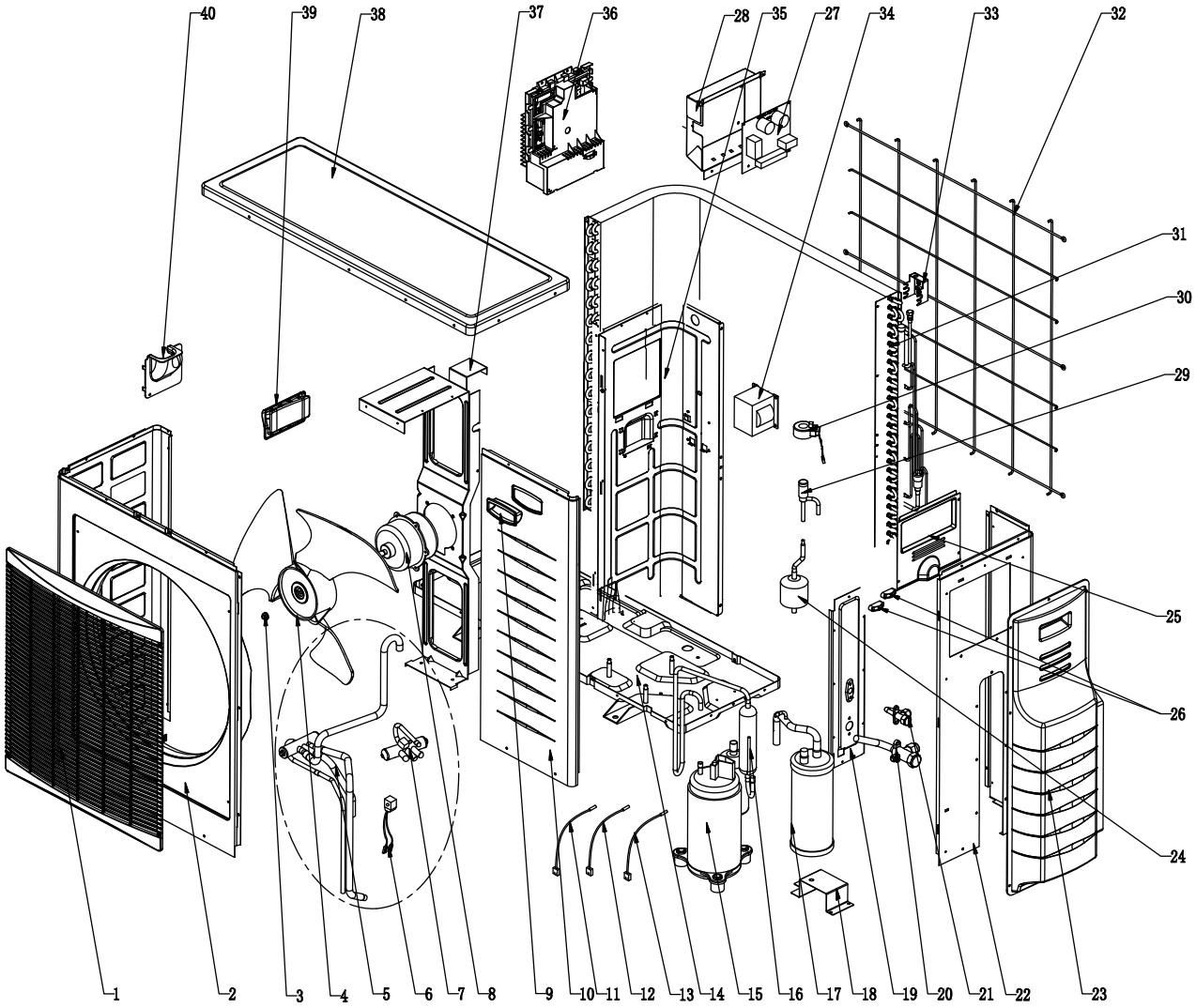


13.5.2 Outdoor Unit DCI 72Z Spare Part List

No.	Part No.	Description	Qty
1	465100000	Outlet Grid	1
2	4523652	Painted Left Cabinet Assy.	1
3	4523758	Nut M8 left	1
4	452960400	Outdoor Fan	1
5	461600002	4-Way Valve Assy.	1
6	452956700	4-Way Valve Coil	1
7	4526522	4-Way Valve R410A	1
8	466130001	DC Motor 70W 830rpm(SIC-71FW-F170-1)	1
9	4522601	Right Handle	1
10	4523653	Painted Right Cabinet Assy.	1
11	452966200	Compressor Top Thermistor(CTT)	1
12	452956500	Suction Thermistor(SUCT)	1
13	452677601	Outdoor Coil Thermistor(OCT)	1
14	452809900	Base Plate Painting Assy.	1
15	452803300	Compressor Assy. TNB220FLBM1	1
16	452783600	Oil Separator Assy.	1
17	452783200	Liquid-Gas Separator	1
18	453256100	Support Painting Assy./Gas-Liquid Separator	1
19	4526080	Valve Plate Paint Assy.	1
20	4526513	Low Press Valve R410A	1
21	4526514	High Press Valve R410A	1
22	4523654	Painted Right Back Cabinet Assy.	1
23	4522602	Valve Cover	1
24	4518950	Filter Drier BFK-053S	1
25	467300005	Display Assy.(optional)	1
26	204107	Cable clip Nylon	2
27	467420003	7 Poles Terminal Block	1
28	453138800	Terminal Plate	1
29	4526215	Electronic Expansion Valve ZDPF(L)-1.6C-01-RK	1
30	4526216	EEV COIL QA(L)12-MD-02	1
31	462300002	Condenser Assy.	1
32	453175500	Guard Net Painting Assy.	1
33	453083800	OAT Support	1
34	453256000	Choke Assy.	1
35	452809700	Partition Plate	1
36	453170000	Controller	1
37	452888500	Motor Support	1
38	464250004	Controller Connect Plate	1
39	4526968	Grounding wire with magnetic ring	1
40	4526774	Outdoor Air Thermistor(OAT)	1
41	4523657	Painted Top Cover Assy.	1
42	4522600	Left Handle	1

13.6 Outdoor Units: DCI 80Z - Exploded View

13.6.1 Outdoor Units - General Assembly



13.6.2 Outdoor Unit: DCI 80Z - Spare Part List

No.	Item	Description	Quan.
1	465100000	Grill/ DCI Trio	1
2	4523652	PAINTED LEFT CABINET ASSY	1
3	4523758	Nut M8 left	1
4	452960400	Outdoor Fan	1
5	461600023	4-Way Valve Assy.	1
6	461030003	4-way Valve Coil	1
7	4526522	4-WAY VALVE R410A	1
8	466110008R	DC Resin Motor	1
9	4522601	Right Handle	1
10	4523653	Painted Right Cabinet Assy.	1
11	467400200	Compressor Top Thermistor(CTT)	1
12	467400040	Condenser Middle Temperature Sensor/OAT & OMT	1
13	452677601	Outdoor Coil Thermistor(OCT)	1
14	452809900	Base Plate Painting Assy.	1
15	460080000R	Compressor Assy./ C-7RVN153H0W □SANYO ShenYang)	1
16	452783600	Oil Separator Assy.	1
17	452783200	Liquid-GAs Separator	1
18	453256100	Support Painting Support Assy./Gas-Liquid Separator	1
19	4526080	Valve Plate Paint Assy	1
20	4526513	Low Press Valve (R410A)	1
21	4526514	Hight Press Valve(R410A)	1
22	464080007	Right-Rear Plate/DCI 80 CR	1
23	4522602	Valve Cover	1
24	4518950	Filter Drier BFK-053S	1
25	464250093	Protecting Plate /controller	1
26	204107	Cable Clip Nylon	2
27	467300185R	Controller / DCI 80 CR Filter Board	1
28	464280003	Terminal Plate/ DCI 80Z	1
29	4526215	Electronic Expansion Valve ZDPF(L)-1.6C-01-RK for R410A	1
30	4526216	EEV COIL QA(L)12-MD-02	1
31	462300002	Condenser Assy.	1
32	453175500	Guard Net Painting Assy.	1
33	453083800	Support/OAT	1
34	467550002R	Choke / DCI 80 CR	1
35	464730010	Partition Plate Assy./DCI 80Z	1
36	467300184R	Controller / DCI 80 CR OUTDOOR BOX ASSY	1
37	452888500	Motor Support	1
38	4523657	Painted Top Cover Assy.	1
39	4522600	Left Handle	1
40	465120013	Air Outlet Cover/DCI 80 CR R410a	1

14. OPTIONAL ACCESSORIES

14.1 RCW Wall Mounted Remote Control

14.1.1 The RCW wall mounted remote control can be fitted to a large range and models, It can be used as IR (wirless mode) or wired controler.the RCW can control up to15 indoor units using the same settings (on its wired aplication).

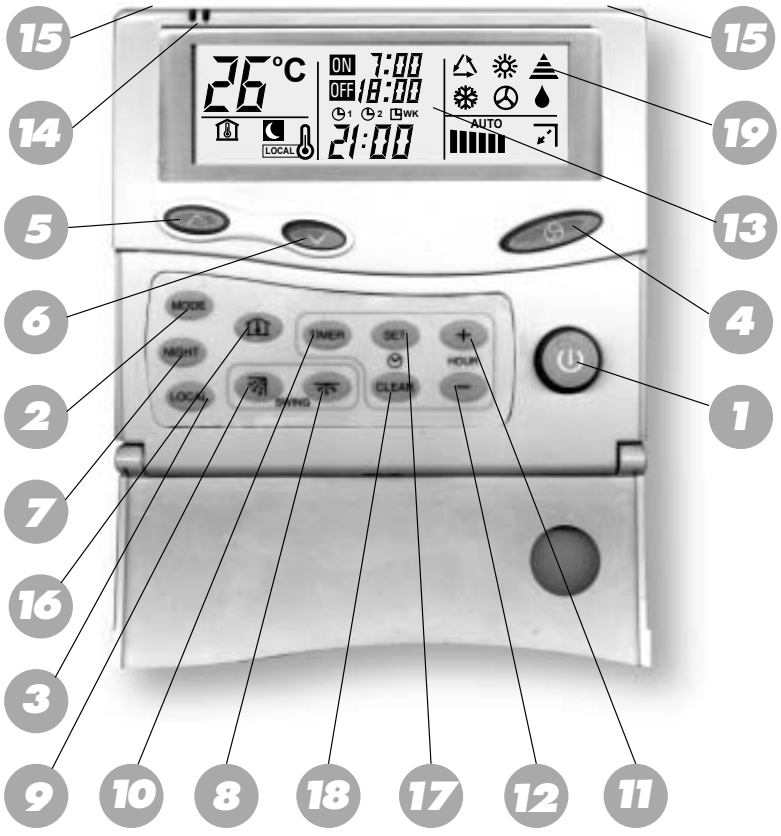
The max wiring length between the controller to the last indoor unit is 300m. for application on WNG LED indoor units an additional interface PCB is needed.

Ordering code no':

RCW – 436195
WNG add' PCB - SP000000290.

REMOTE CONTROL

1. START / STOP button
2. Operation mode selection button COOLING, HEATING, AUTO COOL / HEAT, DRY, FAN.
3. LOCAL temperature sensing button
4. FAN SPEED and AUTO FAN button
5. Room temperature UP button
6. Room temperature DOWN Button
7. NIGHT button
8. Airflow direction MANUAL positioning cor
9. Airflow direction AUTO-CONTROL buttor
10. TIMER button
11. TIMER UP button
12. TIMER DOWN button
13. LCD operation display
14. LOCAL sensor
15. Infrared signal transmitter
16. ROOM temperature button
17. TIMER SET button
18. TIMER CLEAR button
19. Transmission sign

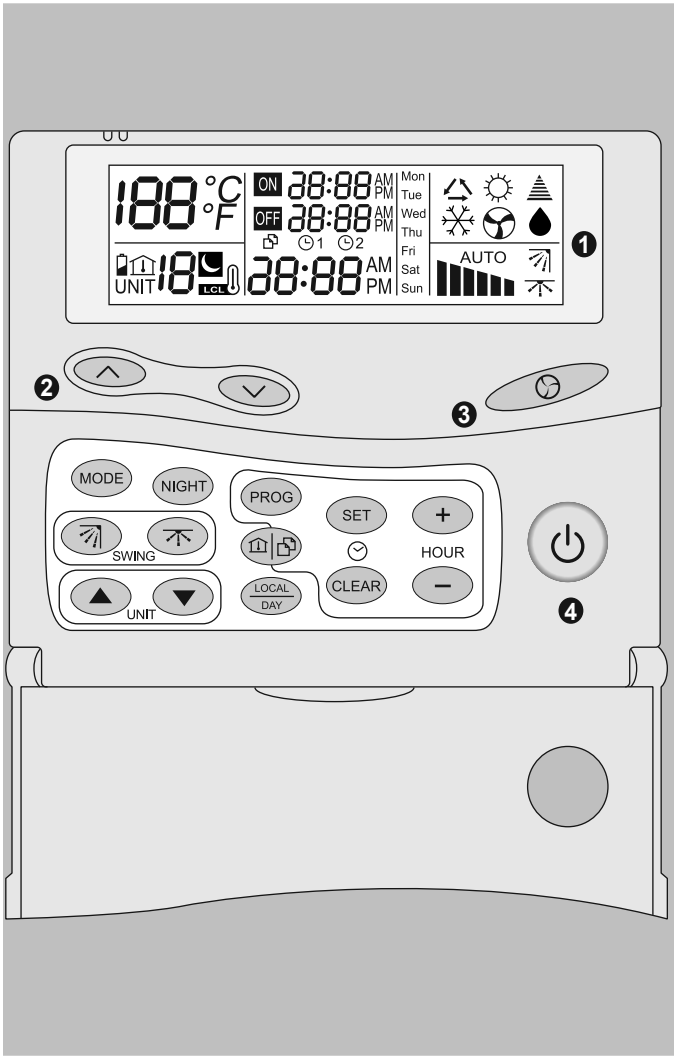


14.2 RCW2 Wall Mounted Remote Control

14.2.1 The RCW2 wall mounted remote controler is a wired controler that can provide affective controling management up to 15 different settings and temp' zones.

The RCW2 can be connected up to a max' of 32 units,allowing a max wiring length of 1000m for application on WNG LED indoor units an additional interface PCB is needed.

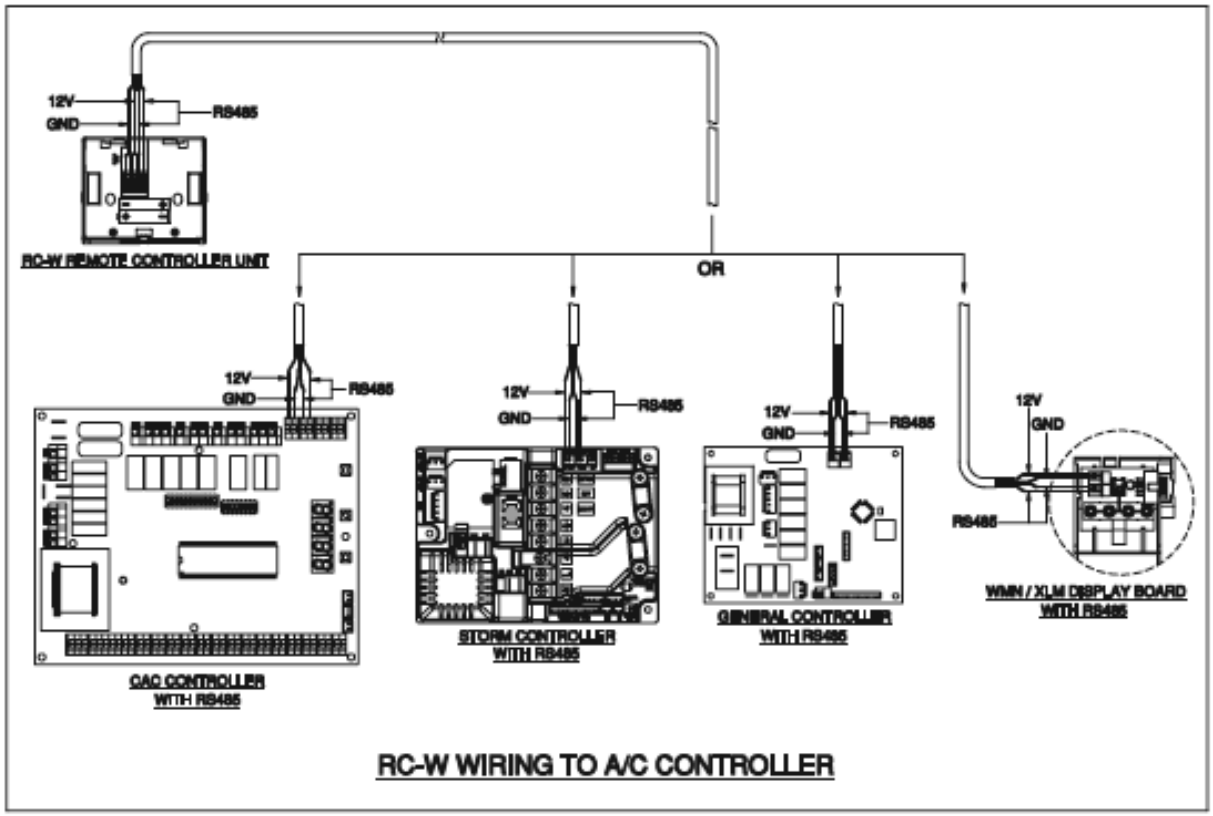
Ordering code no':
RCW2 – SP000000081
WNG add' PCB - SP000000290



1. Display screen.
2. Keys for raising and lowering the set temperature.
3. Ventilation mode selection :
   - Low speed.
   - Medium speed.
   - High speed.
   - AUTO : Automatic speed selection.
4. ON / Standby.

- SET — Accessing the time setting mode.
- \+ — Advancing the time setting.
- – — Retarding the time setting.
- CLEAR — Clearing memory of programmed time settings in programming mode.
- LOCAL DAY — Day of the week selection key or sending "I feel" local temperature setting.
- PROG — Programming mode key.
- "Copy" key, enabling zone parameters to be duplicated for other zones.
- MODE — Operating mode selection.
- NIGHT — Day /Night key.
- Current zone setting: zone above.
- Current zone setting: zone below.
- Louver : step by step or horizontal.
- Louver : vertical.

14.3 RCW / RCW2 Wiring Connections as Shown on KIT



RC-W WIRING TO A/C CONTROLLER

APPENDIX A

INSTALLATION AND OPERATION MANUALS

- ► **INSTALLATION INSTRUCTION CKD DCI**
- ► **INFRARED REMOTE CONTROL RECEIVER**
- ► **OPERATION MANUAL RC-3**
- ► **OPERATION MANUAL RC-4**
- ► **OPERATION MANUAL RC-7**